EPA

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle WA 98101

EPA-10-AK-Valdez-NPDES-79
April 1980
EPA 910/9-79-064

Final

Environmental Impact Statement

Alaska Petrochemical Company

Refining and Petrochemical Facility
Valdez, Alaska

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alaska Petrochemical Company

Refinery and Petrochemical Facility,

Valdez, Alaska

Prepared by
U.S. Environmental Protection Agency
Region 10

Cooperating Agency
U.S. Department of the Army, Corps of Engineers

With Technical Assistance from
CCC/HOK-DOWL
4040 B Street
Anchorage, Alaska 99503

Responsible Official:

Donald P. Dubois
Regional Administrator

April 25, 1980
Date

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION X

1200 SIXTH AVENUE

SEATTLE, WASHINGTON 98101

April 25, 1980

REPLY TO ATTN OF: M/S 443

To All Interested Government Agencies, Public Officials, Public Groups and Citizens

Pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 and implementing Federal Regulations, I am forwarding for your review and comment this final Environmental Impact Statement (EIS) for the Alaska Petrochemical Company's (Alpetco) Proposed Refinery and Petrochemical Facility in Valdez, Alaska. Alpetco has applied for a National Pollutant Discharge Elimination System (NPDES) permit to discharge wastewater to navigable waters pursuant to the provisions of the Clean Water Act and hence is subject to the provisions of the National Environmental Policy Act (83 Stat. 852) under Section 511(c)(1) of the Clean Water Act.

After a careful review of all comments received on the draft EIS, draft permit, and other associated documents, EPA recommends issuance of the NPDES permit with certain conditions. Mitigating measures resulting from the EIS process have been incorporated into the final NPDES permit as conditions of that permit. The final NPDES permit will be issued on Friday April 25, 1980 and become effective on May 25, 1980 unless a request for an evidentiary hearing (pursuant to 40 CFR 124.74) is granted.

The draft EIS has not been substantially revised as a result of the comments received, therefore changes have been made to it by incorporation, additions or deletions as appropriate. This final EIS also contains a summary of the project, discussion of issues raised during the review period, response to individual comments and the final NPDES permit.

The Environmental Protection Agency will announce the availability of this final EIS in the Federal Register on Friday April 25, 1980, initiating a 30-day review and comment period. Comments on this final EIS and EPA's recommended action are welcomed and should be submitted to the Environmental Evaluation Branch, Mail Stop 443, at the above address. EPA's final decision will be made at the close of the 30-day comment period.

Sincerely,

Donald P. Dubois
Regional Administrator

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- Existing Conditions
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- List of Preparers
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- Geotechnical
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- Socio Economics
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The Anchorage Historical and Fine Arts Museum provided historical photographs of the Valdez area which appear on the divider pages. Cooperation and assistance of museum personnel are appreciated. Following are descriptions or captions for the photographs.

Summary

Upper falls and canyon of Solomon Gulch

Additions and Revisions

Filling sacks to turn the Valdez Glacier Stream flood

Comments and Responses - EIS

Valdez Pier with Valdez Glacier in background, 1909

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A trail barn

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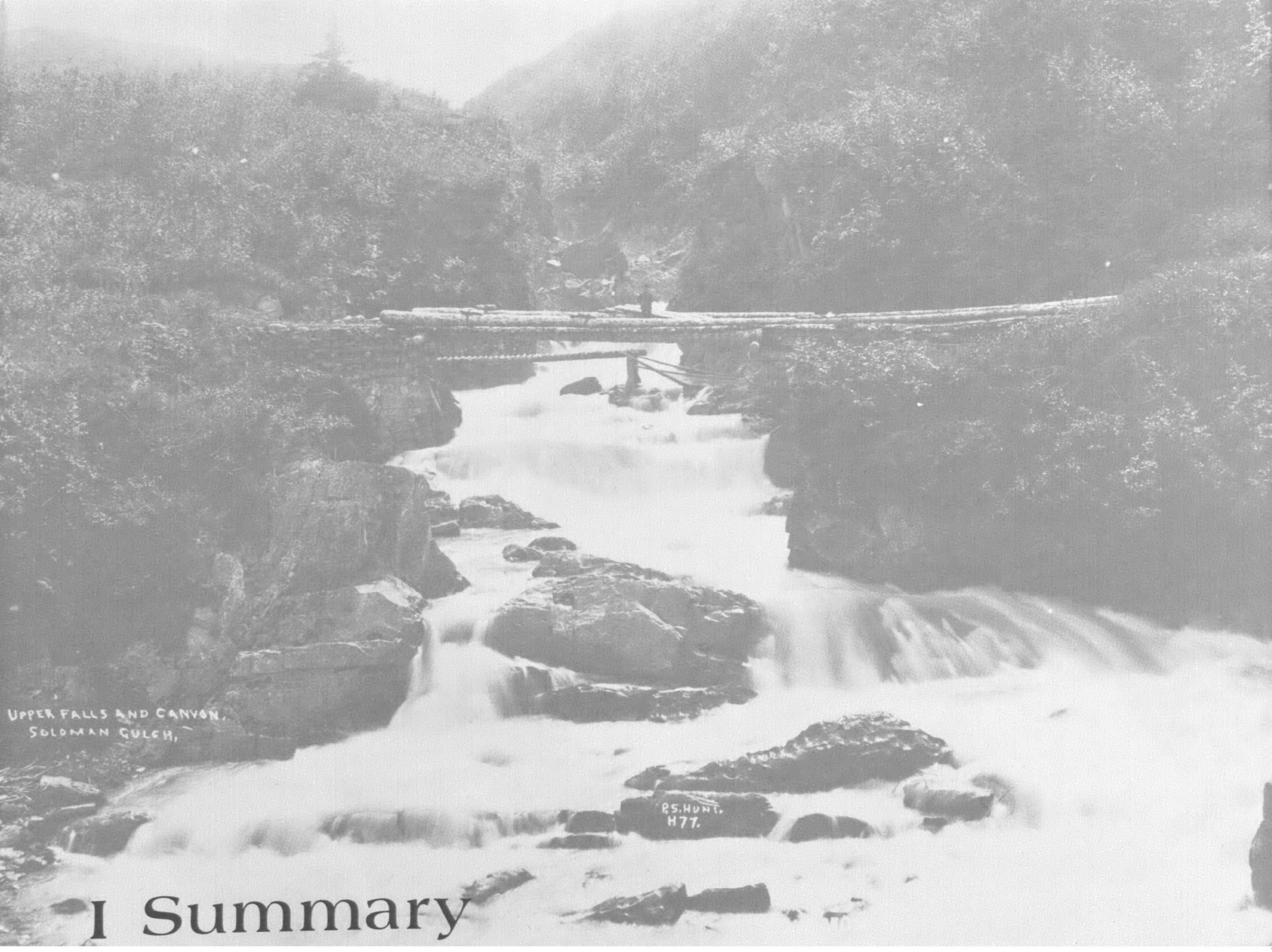
The Thirtieth Infantry Band giving Valdez a concert

List of Preparers

A townsperson posing with Valdez's own pet bear in front of P.S. Hunt's photography studio. Hunt is responsible for a great number of photographs taken around Valdez in the early 1900s.

EIS Distribution List

The first horse sleighs to arrive in Valdez from Fairbanks, December 20, 1905



1 Summary

SUMMARY
ENVIRONMENTAL IMPACT STATEMENT

New Source NPDES Permit for the
Alaska Petrochemical Company
Refinery and Petrochemical Facility, Valdez, Alaska

U. S. Environmental Protection Agency
Region 10
Seattle, Washington

( ) Draft Environmental Impact Statement
(X) Final Environmental Impact Statement

Type of Action:
(X) Administrative
( ) Legislative

Summary Description of Administrative Action:

The United States Environmental Protection Agency (EPA) has been considering the issuance of a New Source National Pollution Discharge Elimination System (NPDES) permit for wastewater discharge from the proposed Alaska Petrochemical Company (Alpetco) Refinery and Petrochemical Complex in Valdez, Alaska. The issuance of such a permit is a type of federal action which is subject to the National Environmental Policy Act of 1969 (NEPA). Pursuant to NEPA and implementing regulations issued by the Council on Environmental Quality (CEQ) and the EPA, an Environmental Impact Statement (EIS) has been prepared to evaluate the potential impacts of the proposed action on the environment.

EPA's NPDES regulations [40 CFR 122.47 (c) (2)] require that the EIS include a recommendation on whether the NPDES permit is to be issued, denied, or issued with conditions, and further, that such action shall occur only after a complete evaluation of the projected impacts and of the recommendations contained in the Final EIS. EPA recommends the issuance of an NPDES permit with conditions. Conditions to the permit are discussed in Section IV. EPA's final decision will be made following the close of the 30-day comment period on this Final EIS, to

ensure that views and comments of interested parties and agencies accompany the proposal through the agency's final decision-making process.

The 30-day review and comment period on this Final EIS begins when the Notice appears in the Federal Register. This Notice announces the availability of the Final EIS. The Notice in the Federal Register also initiates the 30-day period during which requests for evidentiary hearings on the NPDES permit can be made (pursuant to 40 CFR 124.74).

In addition, the U.S. Department of the Army Corps of Engineers, Alaska District, is exerting jurisdiction over this action under Section 10 of the River and Harbor Act of 1899 which provides for control over structures or work in or affecting navigable waters of the U.S.; and under Section 404 of the Clean Water Act which provides for regulation of the discharge of dredged or fill material. Action by the Corps of Engineers could be issuance of the permits, or issuance of the permits with stipulations. The Corps intends to adopt this Final EIS to fulfill its NEPA obligations if its concerns are satisfied in the final document.

The Draft EIS became available on December 7, 1979. This Final EIS expands upon or revises certain issues from the Draft EIS; however, this volume is not intended to stand alone. Because few substantive changes to the draft document have been noted, this Final EIS summarizes the proposed project and anticipated impacts, and provides updated information in the form of revisions or additions to specific portions of the DEIS. Data from the remainder of the Draft EIS are necessary to make a complete evaluation of the proposed project. If Alpetco's proposal receives all clearances to proceed to detailed design and construction, EPA would still have the option of supplementing this EIS should the detailed design phases reveal new information which would substantially alter the conclusions or recommendations of this document.

Summary Description of the Proposed Project

The Alaska Petrochemical Company (Alpetco) proposes to build a grassroots (entirely new) refinery and petrochemical facility in Valdez, Alaska, to process 150 thousand barrels per day of Alaska North Slope crude oil into the maximum

practicable quantity of refined products to supply the West Coast petroleum fuels market. Royalty crude oil would be purchased from the State of Alaska under an existing contract ratified by the Alaska legislature in June 1978.

It is estimated that the proposed project would require three years and $1.8 billion to construct. The plant would be fully operational in early 1984.

The proposed location is a 1,400-acre tract of land owned by the City of Valdez which lies north of the Richardson Highway and adjacent to Valdez Glacier Stream. Facilities there would include a process area, a tankage area containing about 77 tanks of various types, an industrial wastewater treatment facility, a power plant, an administration building and support facilities such as a fire station and warehouses. A temporary construction camp to house 2,500 workers would be located in the northern portion of the plant site during construction. Other facilities would include a products shipping dock near Solomon Gulch on the south shore of Port Valdez, and a construction barge dock at an old city dock location at the former Valdez townsite. A tract of land adjacent to the barge dock would be leased as a staging area during construction.

Feedstock for the facility would be provided via a 20-inch pipeline connection from the trans-Alaska pipeline to on-site storage. All product storage also would be on site. Refined products would be carried in small-diameter pipelines to the products dock.

Projected Impacts

Air pollutant concentrations would increase somewhat in the plant vicinity. EPA has made a preliminary and final determination, however, that construction of the Alpetco plant would not cause air quality deterioration beyond acceptable limits if the best available control technology is employed in all process units. Notice of the final determination was published in the Federal Register 1 April 1980. Also, an average of 7.4 million gallons per day of treated industrial wastewater would be discharged into Port Valdez. It is expected that the rotating biological contactors treatment unit, a proven technology, would produce a treated effluent which meets EPA refinery effluent standards and State of Alaska receiving water standards.

Shipping of refined products would add approximately 128 vessels per year to the Port Valdez marine traffic. General marine cargo would be transported via the Valdez city dock. The increased vessel traffic would be well within the capability of the existing Coast Guard Vessel Traffic System to provide navigational assistance.

The available supply of permanent housing in Valdez would not be sufficient to accommodate growth during the early years of refinery construction and operation. Positive economic impacts would affect employment, the proposed new city dock and public revenues. Municipal services seem adequate to meet the resulting population growth. Valdez community support for the proposed facility is strong.

Although in a seismically active area, the proposed site has no seismic constraints to construction of a safe facility assuming proper design and construction practices. The soils generally are well graded and have a low potential for frost heave and would not be a construction problem. There is a sufficient supply of groundwater to supply the refinery's needs without affecting the surrounding area.

The National Marine Fisheries Service and U. S. Fish and Wildlife Service have determined that there are no endangered species that would be threatened by the proposed facility. Several salmon-spawning streams adjacent to the site would have to be protected by design and operating procedures.

Other impacts from noise, odor, solid waste disposal and visual effects do not appear significant.

The facility poses no known threat to any property listed in, or eligible for inclusion in, the National Register of Historic places.

Alternatives Considered

The constraints of the Agreement for the Purchase and Sale of Alaska Royalty Crude Oil between Alpetco and the State of Alaska require that the proposed refinery be constructed within Alaska. The merits of 12 locations throughout

Alaska were considered during final site selection. Valdez was selected as the site for the proposed facility, primarily due to the community support received, the proximity to the crude supply, the deep-water port, no evidence of insurmountable environmental problems, and an existing infrastructure to accommodate anticipated growth.

From four alternative access routes on the south and west sides of the site the existing Valdez Glacier Stream Haul Road is proposed as the primary access to the facility. Section II contains a detailed discussion of several issues relating to these alternatives. Solomon Gulch on the south shore of Port Valdez was selected over Ammunition Island on the north shore and Allison Point adjacent to the Alyeska Marine Terminal as the site for a tanker dock for shipping refinery products.

In order to best meet potential West Coast market demands and to minimize the production of unmarketable residual heavy fuel oils, a slate of products is planned consisting of about 52% unleaded gasoline, 20% jet fuel and 28% other fuel and chemical products. More than one hundred variations of several process schemes were evaluated to arrive at an ultimate process design. Coal, fuel oil and by-product gas were considered as energy sources.

Opportunities For Comment

Comments from other agencies and private citizens have been solicited relative to the proposed project, and consolidated public hearings have been conducted. Copies of the Draft EIS and the Draft NPDES permit were on file for public inspection beginning December 7, 1979, at EPA Region 10 headquarters in Seattle, WA; the Alaska Operations Office of EPA in Anchorage; the City of Valdez public library; and the City of Juneau public library. In addition, the Prevention of Significant Deterioration (PSD) permit application, regarding air quality, has been available since December 18, 1979, at the same three locations as well as at the public library in Fairbanks. Also, the Corps of Engineers issued public notices on October 19, 1979, regarding Sections 10 and 404 permit applications.

In an effort to review the entire project as a whole, consolidated public hearings were conducted to receive comments on the Draft EIS and the four major

federal permits, NPDES, PSD, Section 10 and Section 404. The comment periods on the EIS and on the air and water quality prmits were extended to a common closure date of February 16, 1979, to assure that all issues were considered together. Public hearings were conducted in Anchorage on January 29, 1980; Valdez on January 30, 1980; and Juneau on January 31, 1980. Records of those hearings comprise Section V of this Final EIS.

Copies of this Final EIS are on file and available for public review at EPA Region 10, Room 11D, 1200 Sixth Avenue, Seattle; Alaska Operations Office of EPA, Room E535, 701 "C" Street, Anchorage; the Alaska District Corps of Engineers, Regulatory Functions Branch, Building 21-700, Room 113, Elmendorf Air Force Base; the Alaska Department of Environmental Conservation Office in Juneau; and public libraries in Valdez, Juneau and Fairbanks.

II Additions and Revisions

SECTION II

This section contains additions to and revisions of material contained in the Draft EIS. These discussions are a result of comments received during the Draft EIS review period. The discussions are presented in the order in which they appeared in the Draft EIS. Each discussion begins a new page which bears a heading that ties it to the draft document. *A change in typestyle such as this* will indicate the material that has been revised or inserted. Where the entire entry in this section is an addition or revision and no previous material is repeated, the regular typestyle is used.

Discussions entitled "Additions" are intended to expand upon information contained in the Draft EIS. Discussions entitled "Revisions" are intended to replace the entire discussion which appears under the part or subpart noted in the title. In the case of a discrepancy between material in this Final EIS volume and information in the Draft EIS or a permit application which predates the Final EIS, the material contained herein should be considered the most recent and accurate information.

This section of additions and revisions includes a Mitigation Measure Summary. Many of these measures were identified in the draft EIS Section 7.1. Alpetco is committed to comply with these measures, and the measures are included as conditions of the NPDES permit.

The following index lists all discussions which have been expanded upon or revised in this FEIS.

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14	Revision of Section 3.3.4 - Pipelines	9
16	Revision of Figure 3.3-5	10
51	Revision of Section 3.8 - Spill Prevention & Control	11
86	Revision of Section 4.3.3 - Air Quality Standards Compliance, Subsection BACT, Subpart FCCU	12
104	Revision of Section 4.3.8 - Alternate Transportation Routes, Subsection Pipeline Routes	13
120	Revision of Section 5.2.2 - Groundwater, Subsections Regional Conditions and Site Conditions	17
125	Revision of Section 5.3.3 - Physical Hydrology, Subsection Circulation	20
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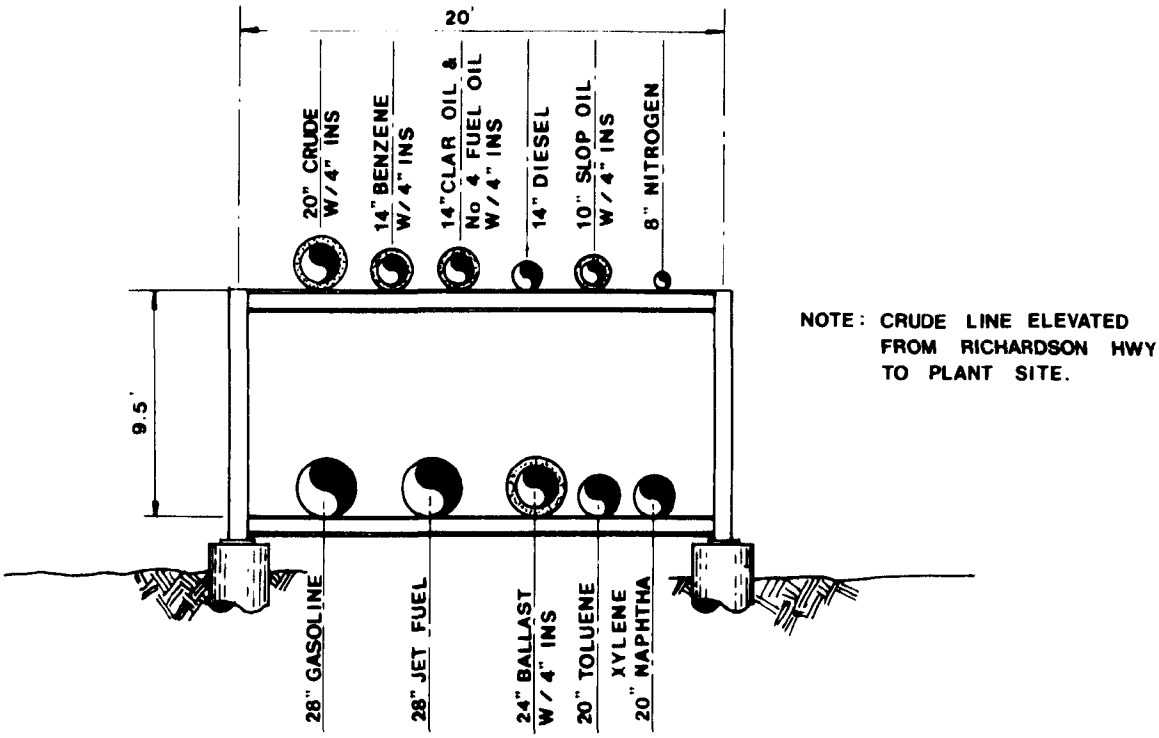
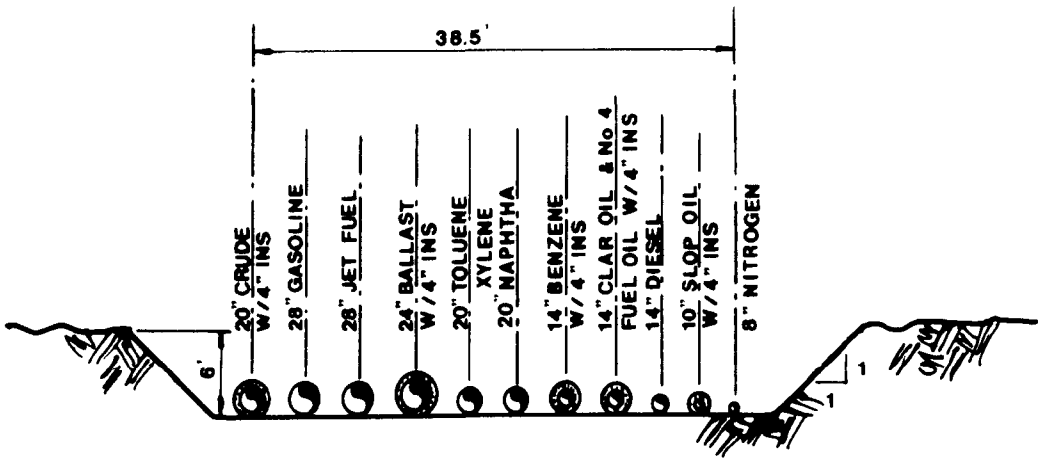
REVISION OF SECTION 3.3.4 PIPELINES

There would be 10 products pipelines and one crude supply line which would be constructed in a *combination of buried and above ground modes. The crude supply line from the Alyeska Pipeline to the Dayville Road and the entire pipeline bundle from the Richardson Highway in a westerly direction to the point of departure from Dayville Road would be a buried configuration. The remaining sections of pipeline from the proposed plant site to the Richardson Highway and from the point of departure from Dayville Road to the products dock would be constructed above ground on a two-level structure (see Figure 3.3-5 Revised). Approximately half of the length of the pipeline would be constructed in a buried mode and the remaining half in the elevated configuration.*



NOTE: CRUDE LINE ELEVATED FROM RICHARDSON HWY TO PLANT SITE.

ELEVATED SEGMENT



BURIED SEGMENT

TYPICAL PIPELINE CONFIGURATIONS (REVISED) Figure 3.3-5

REVISION OF SECTION 3.8
SPILL PREVENTION AND CONTROL

3.8 SPILL PREVENTION AND CONTROL

Prevention of spills of oil and related petroleum products is one of the prime objectives both in the design and the operation of the proposed facility and includes but would not be limited to: siting and design criteria for all facilities; operating procedures and their periodic review; inspection and monitoring of facilities; personnel training; revision of operating procedures (where required); and redesign of facilities (if necessary).

Among specific design parameters are: *impervious* containment dikes around all tankage (feedstock and product) *with a capacity to contain the stored material plus storm water or snowmelt;* containment of storm water from the process area(s); ability to treat contaminated storm water in the wastewater treatment facility; leak-detection systems *capable of detecting small volume or slow rates of leakage* for the pipeline system; and appropriate use of valves to minimize potential spill volumes *particularly at stream crossings.*

(At this point the text resumes as it appears on DEIS p. 51.)

REVISION OF SECTION 4.3.3
AIR QUALITY STANDARDS COMPLIANCE
SUBSECTION - BEST AVAILABLE CONTROL TECHNOLOGY
SUBPART - FCCU

FCCU: As discussed in Section II, p. 38, the PSD permit preliminary determination made one alteration to the originally proposed best available control technology. The standard determined to be BACT will require a 95 percent removal of SO_2 from the FCCU tail gas. This level of SO_2 removal cannot be accomplished utilizing the proposed equipment for this particular process unit alone, even in conjunction with hydrotreating the feedstock. The company must determine how it expects to achieve this level of control; however it need not make that determination at this time. The company must, however, remain within the total emissions levels specified by the permit regardless of the technology chosen. There are options available to Alpetco to achieve the emissions levels, including changing their process design to eliminate the FCCU and the use of additional control technologies on the FCCU. In the latter instance, such control could include a flue gas scrubbing system. EPA believes that if Alpetco chooses to add controls to the FCCU, then the most likely control able to achieve 95 percent removal is a wet scrubber system. A wet scrubber system also would provide particulate removal which would be at least equivalent to the degree of control achieved with an electrostatic precipitator, and thus eliminate the need to install a redundant control device. It is expected that the FCCU feed hydrotreater would remain in the system. A brief discussion of the wastewater impacts from a wet scrubber system are included in Section II, p. 36.

REVISION OF SECTION 4.3.8
ALTERNATE TRANSPORTATION ROUTES RELATIVE TO THE SITE,
SUBSECTION - PIPELINE ROUTES

Pipeline routes: From the intersection of the Richardson Highway and Dayville Road there are two alternative routes to enter the site with the crude and products pipelines. The preferred route begins directly north of the intersection and continues northward to the site. The alternate route is parallel to and south of the Richardson Highway from its intersection with Dayville Road, continuing northwesterly to an existing levee along Valdez Glacier Stream, then along vehicular route #2 to the proposed site (see Figure 3.3-1, DEIS p. 10). (Note: The above paragraph is repeated from DEIS p. 104. The remainder of this discussion is a revision of the previous material, but because of its length, the script type is not used.)

The preferred route as proposed is located within a 290 m (950 ft) wide corridor immediately adjacent to the southeast boundary of Robe River residential subdivision and a 122 m (400 ft) wide corridor from there to the site. The access road adjoining this pipeline route would be restricted from the general public and the lines therefore would be accessible just to company officials. Adjacent to the subdivision, the pipelines and a service road would be placed as far toward the east side of the wider corridor as possible, to provide a buffer between the corridor and the subdivision. This route crosses two anadromous fish streams, Robe River and Corbin Creek (Robe), as well as two streams which do not bear spawning fish, Corbin Creek (Glacier) and an unnamed tributary to the area drainage system. Approximately 1,554 m (5,100 ft) of the total 3,353 m (11,000 ft) length would cross wetland areas. The remainder of the route contains suitable soils and avoids marsh and other wetland areas.

The alternative pipeline route, which is approximately one mile longer than the preferred route, is located adjacent to the south side of the Richardson Highway right-of-way. Due to aesthetic, security and property access reasons the segments of the pipeline along the highway

would be constructed in a buried mode. The alternative route could not be proposed within the right-of-way on either side of the Richardson Highway, because the Copper Valley Electric Association (CVEA) has secured right-of-way on the south side to install a new transmission line; and an existing power line occupies right-of-way on the northern side. The alternate route would involve crossing approximately 2,800 lineal feet of undeveloped private property on the south side of the highway. The alternate route also would require three crossings of Robe River due to the meandering of the channel immediately west of Dayville Road, and a crossing of Corbin Creek (Glacier). Robe River is an anadromous fish stream and part of the Robe Lake Drainage System. This route enters the plant site at the southwest corner, which is less compatible with the preferred site layout than an entrance into the southcentral part of the site. Approximately 1,981 m (6,500 ft) of the total 4,877 m (16,000-ft) length of the alternate route would be across wetlands.

The relative geophysical risks of the two routes also were considered. The preferred route has undergone no known damage or identifiable physical alterations as a result of the Great Alaskan Earthquake of 1964. The alternate route showed severe responses to the 1964 seismic event. Following the earthquake, the largest individual logitudinal fissure segments observed occurred near the alternate pipeline route (USGS Professional Paper 542-C). The evidence indicates that a pipeline system constructed in this area would be much more vulnerable to damage from a future seismic event than would the preferred route.

Although the crude supply line would be in continuous operation, the products lines would remain empty when products were not being transferred to the dock. A typical tanker loading scenario would be one in which two or more cargos are loaded simultaneously. Using two simultaneous cargos as the worst case, and using average tanker size and loading rate data, there would be flow in some part of the product pipeline system 16 percent of the time. As more simultaneous loadings occur, that percentage drops. The possibility of a seismic event occurring at a time when the products pipeline system is charged there-

fore becomes more remote. The risks of a spill due to gunshot or other accidental damage or vandalism to a line likewise becomes very remote considering that the 16 percent figure assumes only two of the 10 lines are in operation. With shut-off valves at stream crossings, leak detection systems, and other construction and design stipulations to be imposed by the State of Alaska, the risk of a spill becomes very small.

The preferred route was determined to be the alternative that would have the highest operational integrity and lowest risks of a spill. The preferred pipeline route does cross an area that is more sensitive environmentally than does the alternate route. However, the overall line length is a mile shorter, and several measures would be adopted to mitigate potential threats to the Robe Lake Drainage System and the salmon fishery it supports. In response to various comments on the DEIS and discussions with the Alaska Department of Fish and Game, the proposed pipeline design configuration has been changed in this area from buried to an above-ground mode (see FEIS Section II, p. 9). The elevated configuration would minimize the possibility of long-term undetected leaks into the groundwater and surface water systems. It also would allow frequent visual surveillance of the integrity of the pipelines and more rapid response and attention to maintenance requirements than would the buried mode. To further assure that all prudent precautionary measures are taken to ensure the integrity of the pipelines through the Robe Lake Drainage System, the Alaska Department of Fish and Game will require that the following package of design and construction stipulations for the pipeline system be made conditions of the State of Alaska right-of-way lease for the area in which the lines would be constructed: The pipelines shall be above ground throughout the Corbin Creek (Robe) drainage with shut-off valves at the Corbin Creek and Robe River crossings; the pipelines shall be elevated across Corbin Creek (Robe) and Robe River; the access road shall be used only for pipeline maintenance and inspection purposes once the facility is complete; and Alpetco shall establish a coho salmon run of value equal to the Corbin Creek (Robe) run, in conjunction with activities of the Alaska Department of Fish and Game and/or Valdez Fisheries Development Association, within 36 months of plant start-up.

Certain economic considerations and the probability of obtaining clear right-of-way also were compared. The initial construction cost for the additional mile of pipelines necessary for the alternate route would be approximately $2 million; but particularly important would be the additional costs, added risks, and other factors involved with maintaining and operating the additional length of pipelines. Right-of-way across 853 m (2,800 lineal ft) of private property might be difficult to obtain for the alternate route and may require exercising eminent domain proceedings which particularly from a public relations standpoint would be highly undesirable, whereas the preferred route likely would have clear right-of-way through the lease of state land. A comparison of some of these factors for the two routes appears in Table 4.3-6.

Table 4.3-6

COMPARISON OF ALTERNATE PIPELINE ROUTES

CRITERIA	ROUTE 1	ROUTE 2
Total route length	11,000 ft.	16,000 ft.
Lineal ft. of route across wetlands	5,100	6,500
Total number of stream crossings	4	4
Number of anadromous fish stream crossings	2	3
Lineal ft. of route across private property	0	2,800

In addition to the two routes discussed above, the U. S. Department of the Interior Fish and Wildlife Service has suggested a third alternate route in its comments to the Corps of Engineers on the Section 404 permit. A discussion of the suggested route is in Section IV, p. 272-281.

REVISION OF SECTION 5.2.2 GROUNDWATER
SUBSECTIONS - REGIONAL GROUNDWATER CONDITIONS
SITE GROUNDWATER CONDITIONS

5.2.2 Groundwater

Regional groundwater conditions: The developable areas of the Valdez region are located in the larger valleys which have been carved by recent glacial action. The floors of these valleys are formed predominantly of very permeable sands and gravels, deposited by the glacial outwash streams. These permeable deposits compose the aquifers investigated for the proposed project. Recharge to the aquifers comes from the streams which flow through the valleys, as well as from the high amount of direct rainfall occurring during the summer months. During winter, many of the streams dry up as glacial melt and rainfall cease. Thus, recharge to the aquifers occurs primarily during summer months. The water table elevation declines during winter months due to the reduction of recharge, even where no man-made withdrawals are made.

Due to the low density of Valdez population and the absence of significant water-using industry in the region, very little use is being made of the existing groundwater resources. The nearest residential wells are 3.6 km (2¼ mi) south of the proposed refinery production wells. The only sizable uses include that of the Valdez municipal water supply wells, which withdraw a quantity estimated to be less than 3,785,000 liters per day (lpd) (1 million gallons per day [mgd]), and two intermittently used industrial wells located in gravel pits approximately 1.6-2.4 km (1-1.5 mi) northwest of the site. Due to the high rates of runoff and recharge experienced during summer months, it appears that very substantial quantities of water could be withdrawn before a significant lowering of the water table would result.

Site groundwater conditions: The site is underlain by two major aquifer systems: *an upper aquifer, and a lower aquifer.* The upper aquifer is highly permeable. Test pumping at rates approaching 7,600 liters

per minute (lpm) (2,000 gpm) for 72 hours was not sufficient to cause measurable drawdown of the water table in observation wells 150 m (500 ft) from the pumped well. An observation well 15 m (50 ft) from the pumped well showed 1.2 m (4 ft) of drawdown during the test. The static water level (level of standing water in wells drilled into this aquifer) was found to vary from more than 18 m (60 ft) deep near the northern edge of the site, to the ground surface near the southern edge.

The upper aquifer appears to be the winter water source of Corbin Creek (Robe) and Brownie Creek, the streams which originate near the southern edge of the site. Investigations during the spring of 1979 noted that upper reaches of the Valdez Glacier Stream bed were dry, as were beds of other streams that traverse the proposed site; but open water was appearing in lower reaches of the Valdez Glacier Stream bed slightly upstream of the Richardson Highway bridge. The only known winter stream recharge to this aquifer in the vicinity of the site is a flow of approximately 0.14 cms (5 cfs) which enters at the eastern edge of the site via the Corbin Creek (Glacier) channel and promptly permeates the porous material of that streambed. In addition, some snowmelt and winter rains are believed to enter the soil directly with little or no runoff. Due to the highly seasonal nature of the groundwater recharge and the slope of the groundwater table, the water table *elevation fluctuates* rather widely over the year. *Groundwater level data recorded during 1979 and 1980 verifies this fluctuation. The decline of water levels between August 1979 and March 1980 ranges from 8 m (27 ft) in the northwest part of the site, to .24 m (0.8 ft) near the headwaters of Corbin Creek (Robe). It is expected that the level would continue to drop for another two months, until significant recharge begins.*

The lower aquifer seems to be separated from the water table aquifer *by a layer of silty sand/sandy silt which varies in thickness from 10 - 112 feet.* There is abundant water in the upper aquifer, and existing wells drilled in this region of the valley probably have penetrated only the upper aquifer. The static level of the lower aquifer lies

much flatter than that of the *upper* formation, and in fact has about 2.7 m (9 ft) of artesian head near the southern boundary of the site. A 24-hour pump test at 1,250 lpm (330 gpm) was performed in a 15-cm (6-in) well drilled into the formation near the north edge of the site. The well drawdown recovery data indicated that, although of good permeability, the formation apparently has little if any recharge within the vicinity of the project site. *Drawdown of the lower aquifer was noted over most of the site, but no detectable drawdown occurred in the upper formation. These factors indicate that the two aquifers are quite thoroughly separated throughout the site and perhaps throughout most of the valley. However, water level data recorded during the winter of 1979-1980 showed the decline of the static water level in the lower formation has matched almost precisely the decline of the upper aquifer. This correlation could be coincidental, but also suggests that some form of low-capacity interconnection could exist in the vicinity of the site.*

Logs of the wells and test holes and other field data appear in Appendix Vol. I. *FEIS Section II, p. 51, is an Addition to Appendix Vol. I which presents results of the 1979-1980 winter hydrologic monitoring program.*

REVISION OF SECTION 5.3.3
PHYSICAL HYDROLOGY
SUBSECTION CIRCULATION

Circulation: Circulation patterns in the eastern end of Port Valdez are summarized based on continuous recording current measurements in the eastern port area (taken from May through July 1979) and the relation of these measurements to concurrent measurements taken at Valdez Narrows. Flows are east-west due to tidal currents except at the far eastern end, where flows turn north-south, parallel to the shoreline at the eastern port boundary. Two layers exist which flow opposite each other; the layer interface is approximately 20-50 m (66-164 ft) deep. Data from both this summer's study and earlier studies in the vicinity of Jackson Point indicate currents at depths greater than 15 m (50 ft) are generally low, 0.015 meters per second (m/s) (.05 ft/sec), which is at or below the limit of detection of the current meters.

Significant flow events at Valdez Narrows were found to affect current direction changes at the eastern end of the port near the proposed discharge. These events cause either northerly (counterclockwise) or southerly (clockwise) circulation patterns parallel to the eastern port boundary, with layers flowing opposite to each other. For example, a large flow event occurred at Valdez Narrows on May 18-20, 1979. In the eastern port area, the upper layer direction changed from southerly to northerly, with the reverse occurring in the lower layer.

Similarly, low flows at Valdez Narrows are associated with low velocities in the eastern end of the port. For example, a "quiet" period occured from about June 17 to about July 15, 1979. During this period, currents were at or below the threshold value (lowest recordable value) of the current meters. Such periods *could normally be expected to occur for one to two months each year during the summer under stratified conditions and* when storm-driven circulation is at a minimum. *There are a limited amount of oceanographic data available which precisely define flow events and circulation characteristics during that*

period because the velocities are below the detection limits of the current meters.

REVISION TO SECTION 5.6.1 TERRESTRIAL ASSEMBLAGES
SUBSECTION MARINE, SUBPART BENTHOS

Benthos: The major benthic habitats within Port Valdez are classified as: (1) intertidal and subtidal rock, (2) intertidal mud and sand flats, (3) subtidal mud slopes, and (4) deep sedimentary basin. Rocky shore and a narrow subtidal shelf line much of the western half of Port Valdez. In the east, this habitat is reduced to small patches of rocky substrate. A broad and steep sloping incline from the basin floor culminates in intertidal mud and sand flats, stream deltas, and marsh lands.

The intertidal rocky habitat supports a typical temperate community of low diversity. Brown and red algae, blue mussels, barnacles, and snails are the visually dominant species. Many of these species exhibit seasonal and spatial patterns of variation in population density. Barnacle densities vary throughout the fjord, probably as a result of sediment deposition patterns, *rock texture, wave action, and intensity of predation.* Red algae, sea stars, and sea urchins increase in abundance toward the west, where there is less variation in salinity. Seasonal variations in density stem from activity and reproductive cycles stimulated by annual changes in temperature and photoperiod (day-length) *as well as differential mortality rates.*

The rocky subtidal habitat, which is confined mainly to submerged extensions of intertidal areas, has not been extensively studied. Species typically found in more temperate waters have been recorded in Port Valdez. *In areas where kelp are present, they* visually dominate with *seasonal averages ranging from* 15 to 55 percent cover *(Dames and Moore, 1977).* Invertebrate fauna in the rocky subtidal includes sea anemones, bryozoans, and sun stars. Resident or transient fish such as greenling, tomcod, sculpins, and ronquils are common to this community.

The intertidal and mud and sand flats of Port Valdez, though visually less heterogenous than rocky intertidal areas, support many species of polychaetes (annelid worms), crustaceans, and bivalve molluscs.

Animals which depend on organic materials at the water/sand interface or in the sediments, such as worms and crustaceans, dominate in the eastern portion of Port Valdez.

The assemblage of the mud slope is distinct from that of the intertidal shelf, but grades into the deep sedimentary basin assemblage. The dominant organisms in all three habitats are bivalve molluscs and polychaetes. The mud slope also is used by tanner crabs for foraging and mating, and the abundance of very young individuals indicates that this habitat may be a nursery area. Tanner crabs are exploited commercially in Prince William Sound, but the local population will not support a fishery within Port Valdez. *Dungeness crab also are present and support a significant recreational fishery. A detailed description of the habitat can be found in the Appendix Vol. I.*

(At this point the text resumes as it appears on DEIS p. 141.)

REVISION OF SECTION 5.6.1

SUBSECTION MARINE

SUBPART MARINE FISH

Marine fish: Fishes inhabitating the deepwater region of Port Valdez are poorly known. The limited data suggest that demersal fishes such a yellowfin sole, flathead sole, sculpins, tomcod, and pollock are moderately abundant (Smith and Stoker, 1969). Other fish occasionally caught by fishermen include lingcod, greenling, and halibut (Alyeska, 1977). Starry flounder may constitute the most common fish found in the intertidal. *Other* species that migrate into Port Valdez include red, silver, pink, chinook, and chum salmon and Pacific herring. *Herring spawn on aquatic-vegetation around the perimeter of Port Valdez. The important salmon species play a significant role within the marine system prior to spawning in adjacent tributary streams. Salmon are discussed in greater detail within the freshwater subsection of Section 5.6.1 and in Section 5.6.4.*

REVISION OF SECTION 5.6.1

SUBSECTIONS PRIMARY PRODUCTIVITY AND TROPHIC STRUCTURE

Primary production: Rates of net primary production *within portions of* Port Valdez have been reported to be impressively high *(Redburn, 1976).* However the relationship of open-water phytoplankton production in Port Valdez to near-shore marine systems in Valdez Arm or Prince William Sound is uncertain. *Recent Studies (Alexander, 1979) suggest that average primary productivity within open-water areas of the eastern port is relatively low during late summer and fall. On the other hand, primary production from attached plants within discrete areas along the margin of Port Valdez may be quite high (e.g., salt marshes and protected bays).* Mudflat assemblages appear to depend primarily on plant material from marsh grasses and phytoplankton. Such assemblages also depend to a lesser degree on local benthic algae and seagrass. This is a consequence of the bathymetry, salinity, turbidity, and substrate of Port Valdez, which impose specific developmental limitations on marine plant resources and restrict them primarily to the western end of the port.

Trophic structure: *Seasonally* low levels of primary productivity *within the open-water* limit the energy flow through the ecosystem. *Organic matter originating from the margin of Port Valdez probably is important in maintaining the overall productivity of the ecosystem.* Phytoplankton, benthic diatoms, algae, sea grasses, and marsh and terrestrial plants all contribute to the supply of organic energy at the base of the food web.

Energy pathways in Port Valdez are divided into two *primary* systems, linked only at their terminal points. Both rely primarily on the consumption of plant material. The pelagic system depends mainly on the primary consumption of living plant material to transfer organic energy from plant to animal tissues, as is the case in classic terrestrial food webs. In sharp contrast, in the benthic system most of the plant material is converted to organic debris, or detritus, by physical

action and/or microbial degradation. Detritus then is ingested by both suspension feeders and deposit feeders primarily for the colonizing bacteria, which constitute a nitrogen-rich diet. The detritus is subsequently egested, usually having been ground into smaller particles. In a few days, following bacterial recolonization, the particles may be reingested to begin the cycle anew.

Predators on primary consumers in the shallow benthic system include starry flounders, sea ducks, *dabbling ducks*, *geese*, shorebirds, sea stars and *marine snails*. Shorebirds and salmon fry prey on harpacticoid copepods. Starry flounder and sea ducks feed extensively on the intertidal clams and crustaceans. Starry flounder subsequently are eaten by seals and sea lions, and salmon fry are the prey of fish and diving marine birds. Few members of this group are strict residents of the fjord. Thus, it appears that much of the energy transformed by consumers in the shallow habitats ultimately is transported to other systems, sometimes quite far removed from Port Valdez.

(At this point the text resumes as it appears on DEIS p.145.)

REVISION OF SECTION 5.6.1
SUBSECTION - TERRESTRIAL ASSEMBLAGES
SUBPART - WETLANDS

Wetlands: The Corps of Engineers (COE) describes wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Federal Register Vol. 42, #138, Tuesday, 19 July 1977). The proposed project site, being located contiguous to various streams, marshes and headwaters, does contain wetland areas that meet the above description. *The wetlands affected by this project are categorized in three groups. The first is saltwater marshes, which are those shoreline areas in the intertidal zone and tidally influenced areas. Second are the freshwater marshes, which are those upland marsh areas not directly contiguous to or associated with streams or creeks. And third are the watercourse wetlands, which are those areas immediately adjacent to streams and creeks which are susceptible to inundation due to seasonal flooding. Among the eastern Port Valdez wetlands, the saltwater marshes probably have the greatest relative value. They are extraordinary natural systems in which tidal energy circulates nutrients and feeds shoreline organisms. Grasses thrive in the tidal marshes, supplying nutrients to the system and providing a waterfowl habitat. The freshwater marshes and watercourse wetlands directly affected by this project function primarily as sources of groundwater recharge and as links in the food chain. Detritus is carried through the marsh and is consumed by microorganisms and in turn by larger animals.*

Delineation of the wetlands was based on COE criteria. Seasonally flooded land, all permanently flooded land, lands of saturated soil, intertidal lands and lands currently supporting hydrophytic species were included. In areas of high surface water infiltration rates and high groundwater percolation rates, the distribution of certain plant species was used only as a general guide. Wetland limits in these

cases were defined by the flood debris line, the silt line, or an estimate of the one- to two-year flood recurrence elevation. *For purposes of estimating the acreages for watercourse wetlands, the limits were assumed to be 50 feet on each side of a stream or creek centerline.* In areas of braided stream channels, the outer limits of the channel pattern were used. Valdez Glacier Stream, Slater Creek, Corbin Creek (Glacier), Corbin Creek (Robe), Robe River, Lowe River, Abercrombie Creek and unnamed tributaries attendant to these systems have wetlands which are delineated as mentioned above. DEIS Figure 5.6-1 shows the wetland areas relevant to the proposed project.

REVISION OF SECTION 5.8.5 LAND USE
SUBSECTION - REGIONAL LAND USE AND RESOURCE DEVELOPMENT

5.8.5 Land Use

The purpose of this section is to examine land use and development patterns in the region and in Valdez, with an emphasis on long-term changes and emerging patterns of land use in Valdez. This section also describes scenic and recreation resources in the region.

Regional land use and resource development: With the exception of isolated communities, most of the area around Valdez is wilderness (see Figure 3.2-1). Southwest of the city is the Chugach National Forest. To the north and east are mountains and glaciers of the Chugach Mountains, much of which has been selected for ownership by Ahtna Regional Native Corporation. Widely separated communities in the area include Cordova, 72 km (45 mi) southwest, the native village of Tatitlek, 37 km (23 mi) south, and Glennallen, 160 km (100 mi) north of Valdez. A fisheries-related economy supports most residents of towns in Prince William Sound, with secondary support coming from government, tourism, private services, timber and mineral development - not necessarily in that order. Most employment in Valdez is derived from government and the transportation industry (which includes the Alyeska Pipeline Service Company). Because of its isolation from other towns in the region and its ties to state government, Valdez influences and is influenced more by its connections to cities outside of the region, than by any activities within the region.

With respect to resource development feasibility in remote areas, proximity to a nearby community is not normally an important factor. Although there might be significant timber and mineral resources in the area, the actual presence or scarcity of a resource is less important than are other variables. Available export markets, restrictions on land ownership and use, climatic conditions, and transportation problems all affect the feasibility and timing of resource development.

Valdez, for example, hopes to overcome some of these limitiations by construction of new port facilities for export of agricultural products and timber which could be trucked over the Richardson Highway from inland locations.

Analyses which consider all of these factors, however, indicate little potential for significant new resource development in the region during the assumed 1990 impact horizon of the proposed Alpetco facility. The Alaska Department of Natural Resources estimates that most coastal timber and mineral resources will not be developed for at least 25 years in Prince William Sound (Alaska Department of Transportation and Public Facilities [ADOTPF]). Isolated mineral claims north of Valdez are mostly inactive, and areas of highest mineral development potential are in the Wrangell Mountains, 160 km (100 mi) to the northeast (ADEC, Division of Water Programs, 1978). Timber development potential, with the exception of approximately 40 hectares (100 acres) southeast of Port Valdez is rated low (ADOTPF, Oct. 1978).

With respect to fisheries, the Valdez Fisheries Development Association has begun implementing plans to increase pink and chum salmon stock for commercial fishery enhancement with the opening of a hatchery at City Limits Creek. The group has plans for a similar facility at Solomon Gulch, and also is pursuing a hatchery for king and silver salmon to enhance the sport fishery.

Although some resource development is possible (e.g., timber and mineral development on regional and village-selected lands near Tatitlek, or construction of *more* fish hatcheries to *increase both commercial and recreational yields of salmon)*, it is not expected to significantly impact settlement patterns in Valdez or in other communities in the region.

REVISION OF SECTION 6.2.2

GROUNDWATER

6.2.2 Groundwater

Short-term effects: The effects of construction of the proposed facility on the groundwater resources of the area would fall into two main categories: effects on water table, and effects on recharge. Initial estimates of construction water usage average less than 154 thousand gpd for full-scale concrete pouring operations for approximately two years of construction, and up to 4 million gpd for the maximum expected hydrotesting requirements. Since most construction activities would occur during the summer high-recharge period, and are of a short-term nature, this level of water usage should not significantly affect the *upper* aquifer.

The high permeability of the surface materials makes it imperative that spills of construction fuels or toxic substances be prevented. The groundwater would be very susceptible to contamination.

Long-term effects: Two 12-inch diameter production wells each with approximately 1,400 gpm capacity are proposed for operation of the refinery. It is anticipated that the proposed withdrawal of approximately 1.7 mgd of water from the *upper* aquifer would have little impact upon the quality and the available quantity of water from that aquifer. The greatest impact on the water table likely would be a slight *increase in the fluctuation of elevation which normally occurs* during winter months when recharge is at its annual minimum. *Data indicate that this lowering would not exceed 2.5 ft. near the headwaters of Corbin Creek (Robe) over a six-month period of pumpage during which no significant recharge occurs. Drawdown in the site area due to pumpage of the design rates would produce an increase of 25 percent or less in the groundwater level fluctuation which normally occurs over the course of a year.* Barring any major spills of hydrocarbons or toxic substances, the quality of the groundwater would not be affected.

If water for the facility were withdrawn from the lower aquifer, it could deplete that aquifer. However, no such withdrawal is planned. The lower aquifer could be used to meet minor water supply demands or infrequent high capacity demands, but its long-term production capability probably is limited severely by its apparent low recharge rate. Due to its depth and the protective, confining layer of silt, the lower aquifer should be immune from contamination by surface activities.

It is expected that the wetlands and small creeks, mainly Corbin Creek (Robe), near the southern edge of the site which apparently depend on the *upper* aquifer for *part of* their existence, would be affected only slightly by withdrawal of the design flow rates from that aquifer. Whatever drawdown of the aquifer did occur during the winter months due to withdrawal would be expected to cause only a slight down-slope shift of the point at which the stream heads, or first appears. *There is evidence that there is a great variation in the natural winter season flow in Corbin Creek (Robe). Observations during March 1979 revealed a measurable flow in this creek, while during March 1980 there was no measurable flow in the upper reaches of the creek. With this variable natural condition it is difficult to predict the effect and significance of groundwater withdrawal on this creek.* If *adverse* effects occur, their magnitude would be greatest in late winter, just prior to spring breakup (thawing).

There is a lack of available winter water table data upon which to base a more conclusive impact determination. The water well, stream flow and snow depth monitoring program *conducted during for the 1979-1980 winter period provides one year's data for these predictions of effects on the streams.*

Due to the gradient, or slope, of the water table of the *upper* aquifer, and its significant elevation above sea level (approximately 21 m [70 ft] on the site), the relatively small drawdown of the water table in the area due to withdrawal of water for refinery operation would not cause intrusion of saltwater into the aquifer. The lower aquifer also has a water pressure level considerably above sea level (approximately

20 m [65 ft]), thus it would be necessary to lower the pressure in that aquifer by nearly 30 m (100 ft) to provide the elevation difference necessary to allow the possibility of saltwater intrusion.

Currently, there are no significant withdrawals of water from the upper aquifer in the general vicinity of the site and no known withdrawals from the lower aquifer. Due to the considerable recharge available from Valdez Glacier Stream, rather significant withdrawals (on the order of 10 mgd or more) would be required in the developable area west of the site to cause any area-wide effect on the groundwater table which could affect the supply available for the proposed facility.

ADDITIONS TO SECTION 6.3.2 OPERATION EFFECTS
SUBSECTIONS - ZONE OF INITIAL DILUTION AND NEAR-FIELD CIRCULATION

The following material should be inserted following Table 6.3-1 which appears on DEIS p. 192.

Due to the very low measured ambient currents during the worst case, stratified summertime conditions the calculations do not conclusively indicate that a 75:1 dilution could be obtained at the proposed diffuser site. Because of these uncertainties the NPDES permit (see FEIS Section IV, p. 166, Item g) requires Alpetco to design and locate a diffuser that will continually achieve a minimum dilution of at least 75:1 at all points along the boundary of the mixing zone. If it is determined that worst case conditions cannot continually achieve a 75:1 dilution, the permitee may request from EPA and ADEC a reduction in the dilution rate upon showing that Alaska Water Quality Standards for marine waters will be achieved (see p. 167, Item h) so that the boundary conditions are continually maintained. To evaluate the ability to achieve this rate of dilution Alpetco would be required to submit a report containing all data relative to the determination of dilutions (including worst case) and the design and location of the diffuser system six months prior to diffuser construction. The report would be submitted for evaluation to both the Environmental Protection Agency and the Alaska Department of Environmental Conservation.

Near-field circulation: To determine pollutant concentrations in the eastern end of the port, outside of the ZID, a circulation model (Adams, et al, 1979) is used. This model accounts for pollutant transport and spreading, and uses near-field model results as input. A simulation for July 5, 1979, is shown in Figure 6.3-2. This date represents summer stratified conditions (the most critical in terms of initial dilution) and low exchange at Valdez Narrows (the most critical in terms of pollutant build-up). Results are presented as contours of dilution of the proposed discharge water; dilutions range from 100 to 500. This is a typical pattern observed with the plume oriented toward

the south. The effluent discharge is assumed to be trapped in a constant layer at a depth of about 40 m (131 ft) below the surface to provide conservative results.

The additional studies referenced above as conditions of the NPDES permit will further investigate the current and circulation characteristics of eastern Port Valdez.

ADDITION TO SECTION 6.4.1

IMPACTS OF WASTEWATER DISCHARGE

This material should be added at the conclusion of the Subsection entitled General, DEIS p. 202.

In an FCCU regenerator unit wet scrubber system as described in Section II, p. 12, the gas from the regenerator would be contacted with a circulating water stream in a tower. The sulfur oxides dissolve into the water while particulates are removed from the gas, forming a suspension in the water. Because of the buildup of particulates in the circulating water stream, it is necessary to purge some of the water. This purge water must then be treated to settle particulates and lower oxygen demand. The estimated purge water constituents from such a system would be:

Constituent	Concentration
- Na^{+}	1,800 ppm wt
- Ca^{++}, Mg^{++}, Fe^{++}	3 ppm
- $SO_3^{=}$	100 ppm
- $SO_4^{=}$	3,450 ppm
- $CO_3^{=}$	165 ppm
- Cl^{-}, NH_4^{+}, CN^{-}	F 1.0 ppm
Sulfides, Oil, Phenol	Neg
COD	20 mb/l

The solids content in the purge stream is not expected to be large enough to cause concern. If solids content were a problem, a settling pond, a corrugated plate separator or a tube settling device are conventionally used for solids removal. If the organic content of the purge water stream were high, it could be run through the biological treatment system. The organic content should be quite low, however,

and would not be expected to require biological treatment. It would be necessary to run the purge water stream through an aeration tank to convert oxygen-consuming sulfites to sulfates. Because of climatic reasons there is no practical method of treatment for the sodium sulfates which would be in the final effluent stream. The quantities of sodium sulfates should be relatively small (less than 4 parts per thousand) compared to the seawater salt concentrations in Port Valdez (32-34 parts per thousand). State water quality standards would not be violated.

REVISION OF SECTION 6.5.2
SUBSECTION MODELING RESULTS

Modeling Results - The primary effects of atmospheric emissions: Part C (Prevention of Significant Deterioration) of the Clean Air Act requires the preconstruction review of any major emitting facility. The proposed refinery qualifies as a major emitting facility under the Clean Air Act definition. EPA has received a PSD application from Alpetco.

The PSD regulations require that the applicant demonstrate that the proposed source will apply the best available control technology, and will not cause a violation of any National Ambient Air Quality Standard (NAAQS) or PSD increment.

Following review and analysis of the PSD application, EPA has determined that Alpetco proposes to install the best available control technology (BACT) in all process units except the fluid catalytic cracker regenerator. In this case, EPA has determined that BACT will require additional control to clean the flue gas from that unit and to effect a lower sulfur dioxide emission. The emission limits for that unit were set at 95 percent efficiency for the removal of sulfur dioxide from the tail gas.

In order to demonstrate that no violation of the NAAQS or PSD increments would occur, atmospheric dispersion modeling was conducted. Dispersion modeling was performed for significant sources of TSP, sulfur dioxide, nitrogen dioxide, and carbon monoxide emissions. Ambient concentrations during operation of the proposed facility were determined by adding maximum predicted ground level concentrations from the existing sources to the maximum predicted ground level concentrations for the proposed facility. These results are summarized in Table 6.5-2 (DEIS p. 212). In addition, Table 6.5-1 (DEIS p. 210) presents a summary of dispersion model predictions of PSD increment consumption based on Alpetco's original PSD application for the Alpetco facility, compared to the Class II maximum allowable increments.

Significant uncertainties exist concerning dispersion processes in the Valdez area due to complexities of terrain and meteorology. These uncertainties translate directly to the model estimates. The VALLEY and MCRSVAL models indicate possible violations of short-term NAAQS and PSD increments for SO_2 while the RADM model indicates compliance. *However, these model predictions are based on Alpetco's original proposal, which assumes the fluid catalytic cracking unit (FCCU) has no additional SO_2 control beyond hydrotreating the feed to the unit. Running the MCRSVAL model using 95 percent SO_2 removal on the FCCU regenerator as per the BACT determination, predicts no violations of the short term SO_2 increments would occur (see Table 6.5-1 Revised and Table 6.5-2 Revised).*

EPA has accepted the MCRSVAL model for application as a screening model in Valdez, because the "Guidelines on Air Quality Models" (EPA-450-2-78-027) does not contain an appropriate model. However, EPA also determined that the MCRSVAL model is not a refined model in the sense indicated by the "Guidelines." Therefore, lacking both an approved refined model and adequate detailed data to perform the air quality analysis using a refined model, screening models had to be relied upon to determine compliance to the standards and increments. Based upon the results of the screening model analyses, it appears that the proposed Alpetco sources would not cause or contribute to a violation of the NAAQS or PSD increments. Therefore, EPA proposes to approve the Alpetco request to construct the proposed facilities, pursuant to Title 1, Part C of the Federal Clean Air Act "Prevention of Significant Deterioration of Air Quality" (PSD). EPA's PSD preliminary and final

determinations and technical analysis discuss this subject in detail.

The EPA preliminary and final determinations and technical analysis are included in Section IV, Response to Comments on Permits. The notice of final determination was published in the Federal Register on 1 April 1980. This initiated the final 60-day appeal period on this permit. If no appeals are made, the permit will be unencumbered at that time.

Table 6.5-1 Revised

SUMMARY OF PSD INCREMENT CONSUMPTION FOR THE ALPETCO FACILITY AFTER APPLICATION OF BACT

($\mu g/m^3$)

	Pollutant Averaging Period				
	SO_2			TSP	
Increment, Consumption	Annual	24-Hour	3-Hour	Annual	24-Hour
Class II Maximum Allowable Increment	20	91	512	19	37
MCRSVAL Consumption	10	83	507	--	20
VALLEY*	24	370	--	5	72

* VALLEY Model data in this table do not reflect levels to be expected after the application of BACT. This model was not run using the BACT determination. Please see Section IV, Technical Analysis for PSD.

Table 6.5-2 Revised

SUMMARY OF NAAQS COMPLIANCE FOR THE ALPETCO FACILITY

($\mu g/m^3$)

Standards, Predictions	Pollutant Averaging Period							
	SO_2			TSP		NO_2	CO	
	Annual	24-Hour	3-Hour	Annual	24-Hour	Annual	8-Hour	1-Hour
National Primary Standard	80	365	--	75	260	100	10,000	40,000
National Secondary and Alaska Standard	80	365	1,300	60	150	100	10,000	40,000
MCRSVAL Prediction	28	301	2,665*	--	--	--	73	225
VALLEY Prediction**	21	122	--	4	40	28	--	--

* The probability of this violation occurring is very small. Please see Section IV, PSD Technical Analysis (p. 25 of the Technical Analysis) for a complete discussion.

** The VALLEY predictions are not updated as the model was not run using the refined grid. Please see this section and Section IV, Technical Analysis for PSD, for a complete discussion.

REVISION OF SECTION 6.8.1
SUBSECTION NORMAL OPERATIONS

Normal operations: The impacts of discharge from the wastewater treatment facility at the proposed refinery are described in Section 6.4.

Normal operations at the products dock should have little impact on water quality and marine biota. There could be some short-term disturbance of finer bottom sediments due to propellor wash; however, this effect would be very local and of negligible significance. Occasional small product spills probably should be considered a normal occurrence (see Section 6.10.7). It is expected that cleanup operations would recover most of the spilled material and prevent it from contaminating the shore. Marine organisms and *or marine assemblages* may suffer temporary adverse effects during small spill incidents. *Such effects may include direct mortality, reduction in growth and reproductive capability, and interruption of normal ecological processes. The significance of these effects would depend on the size and frequency of spills and the nature of the spilled product. Evidence to date suggests that marine assemblages are able to recover relatively quickly from spill damage, provided that the initial impact is not too severe (Nelson-Smith, 1972). It is likely that any adverse effects resulting from the infrequent small spills described in Section 6.10.7 would be temporary.*

(At this point, the text resumes as it appears on DEIS p. 223.)

REVISION OF SECTION 6.8.4 WETLANDS

Wetlands: Various refinery facilities would affect wetland areas delineated on and adjacent to the proposed refinery site. Bridge and pipeline crossings of Valdez Glacier Stream, Robe River, Corbin Creek (Robe), and Corbin Creek (Glacier) would cross *areas of freshwater and watercourse* wetlands. *In addition, a flood control levee would be constructed adjacent to Valdez Glacier Stream.*

Slater Creek, with seasonal flows from north to south across the site, would be diverted into Valdez Glacier Stream near the northern edge of the site. Storage tanks would occupy portions of the abandoned Slater Creek *watercourse* wetland areas. *A portion of the Slater Creek watercourse wetland would reestablish with the creek diversion.*

Saltwater wetland areas would be affected by construction of the products dock, construction barge dock and effluent outfall pipe. In each case, the impacts would be localized and of short duration. At the products dock, driving of steel-jacketed piles would cause a distortion of surface sediments and resuspending of fine silts in the immediate vicinity of each pile. Dredge and fill operations for the barge dock would cause destruction of the existing benthic fauna in an area of approximately an acre, but the area is populated only sparsely and the impacts would be minimal. Placement of the effluent outfall pipe would require digging a trench through an intertidal area which is populated sparsely with an assemblage accustomed to heavy seasonal suspended sediment loads. Effects there also would be minor.

The approximate acreage of each wetland type which would be affected directly by the proposed project are:

Saltwater Wetlands	*4-1/2 acres*
Freshwater Wetlands	*80 acres*
Watercourse Wetlands	*176 acres*

All other wetlands fall outside of the areas proposed for development and would not be affected.

REVISION OF SECTION 7.1
MITIGATION MEASURES SUMMARY

Numerous mitigation measures have been identified in this EIS, and are presented as a list of suggestions in Section 7.1, DEIS p. 264-273. As those measures were suggested, Alpetco committed to implement many of them; others either were outside of Alpetco's authority to implement, or would be taken into consideration by Alpetco as project planning reached the appropriate level of detail. The status of each item as of December 1979 is noted in the listing as "committed," "not yet committed," or "other authority."

The manner in which the mitigation measures are presented has been changed for the Final EIS. The format is an outline of requirements, rather than a list of suggestions, with several measures grouped into categories of design criteria; groundwater supplies; construction related activities; and spill prevention, control and countermeasure. Some related items from the original list were combined into single mitigative measures; some have been made more specific. Most "not yet committed" items now are committed activities. Measures which are a normal part of permitting stipulations are not repeated here, such as DEIS items 14 and 15 which refer to use of BACT to control air emissions. Those measures outside of Alpetco's authority to implement also are not repeated.

The resulting list of mitigative measures follows. These measures are attached to the NPDES permit and therefore are subject to permit Part B.8 Noncompliance Reporting (see Section IV, p. 171).

The permittee shall meet the following mitigative measures:

A. Design Criteria

1. The final structural design of refinery components shall incorporate a ground motion analysis which assesses the dynamic behavior of the coupled site/refinery components.

2. Culverts, bridges, and other drainage structures on fish streams shall be designed to assure that water velocities will not impede fish passage, and culverts shall be installed in concert with the natural streambed to prevent "perched" conditions which impede fish passage.

3. Noise abatement components on refinery equipment shall be used.

4. Implement a sediment and erosion control program for all disturbed soil surfaces to minimize erosion and subsequent siltation into the streams.

5. The crude supply and product pipelines shall be aligned to minimize the number of stream crossings, and shall be buried to reduce the risk of hydrocarbon spills from accidental pipeline damage and vandalism. However, the crude supply and products pipelines from the plant site to the Richardson Highway shall be elevated to avoid in-water crossing of the Robe Lake System anadromous fish streams.

B. Groundwater Supplies

1. The point of groundwater withdrawal shall be located near the north edge of the site so that drawdown in the vicinity of the Brownie and Corbin (Robe) Creeks is minimized. The groundwater drawdown shall be monitored during plant operations.

2. Additional water to Corbin (Robe) and Brownie Creeks shall be provided to maintain winter flow if the water table is lowered.

3. Pollution of the groundwater source shall be mitigated by the provision of impervious diking and surfacing of areas where hazardous materials are stored.

C. Construction Related Acitivities

1. Construction work at the products dock shall be scheduled between June 1 and July 15 to avoid the intertidal spawning period for salmon in Solomon Gulch Creek.

2. Trenching activities for burial of the effluent pipeline in the intertidal zone shall be scheduled to avoid the pink salmon run in nearby Sewage Lagoon Creek.

3. Buried pipeline stream crossings shall be installed during the least biologically sensitive time of the year employing the construction method that is least damaging for that type of stream. A stream bypass flume shall be utilized to carry stream flows during pipe burial at Dayville Flats Creek. Construction at most streams in the area shall be conducted between June 1 and July 15. Construction at the Lowe River shall take place between March 1 and June 15.

4. Construction activities which could affect the streams during no-flow or very low-flow periods shall be scheduled to minimize the problems associated with increases in erosion and turbidity.

5. Dredging activities for the construction barge dock shall be conducted outside the period of April 7 to June 7 to avoid disturbance of juvenile salmonids present during that time span. Operations shall be conducted with a clamshell to avoid fish entrainment problems, and material shall be deposited inland.

6. Construction and fill material shall be disposed of only in approved landfill sites.

7. Any damage to the Richardson Highway and Dayville Road in the vicinity of the Alpetco operations shall be repaired to its preconstruction condition at the close of construction.

D. Spill Prevention, Control and Countermeasure

1. The permittee shall develop and implement a spill prevention, control and countermeasure plan, and an oil and hazardous substances spill contingency plan for offshore and onshore operations to reduce the chances of spillage of petroleum hydrocarbons and to maximize the effectiveness of control and cleanup measures in the event of a spill. (Current regu-

lations require the plan to be prepared within six months after the date the facility begins operation and to be fully implemented not later than one year after facility startup [see 40 CFR 112.3(b)]; however, under regulations proposed 1 September 1978, any facility which becomes operational after the effective date of those regulations would be required to have the plan prepared before the facility begins operation and to have the plan fully implemented within six months of the date of startup [see 40 CFR 151.3(b)].)

2. Positive-seal liners shall be used in all ponds containing hazardous materials.

3. The permittee shall containerize any hazardous materials temporarily stored on-site, using sealed 50-gallon drums or similar sealable and transportable containers. (This shall be done according to the provisions of the Resource Conservation and Recovery Act.)

4. Leak detection systems capable of detecting small volumes and slow rates of leakage, and the proper use of valves in the pipelines shall be used to minimize potential spills.

E. The permittee shall assist in establishing an interdisciplinary team of engineers, fishery biologists, and hydrologists to provide early review of construction plans and schedules.

F. The permittee shall establish training programs to meet the staffing requirements of the proposed facility during its construction and operations phases.

G. Collect rain runoff and snowmelt along the eastern periphery of the site and direct it to a point on Corbin Creek (Glacier) minimizing the potential for contamination of a portion of the surface runoff.

H. Fences shall be installed around the construction camp and all permanent facilities and garbage disposal areas to help minimize human/bear interaction.

I. The permittee shall leave a buffer zone of undisturbed natural vegetation with minimum radius of 91 m (300 ft) around all bald eagle nest sites to reduce disturbance and prevent "blowdown" of nest trees. Pipeline construction activities shall not be conducted in the vicinity of active bald eagle nests during the nesting period if the nests are active.

J. The permittee shall to the extent possible, locate project facilities away from nesting areas or resting areas for migrating birds.

K. If any historical or archaeological site is discovered, the permittee shall stop construction work at the location and contact the appropriate authorities.

4791 Business Park Boulevard
Suite 1
Anchorage, Alaska 99503
907-276-2335

Woodward-Clyde Consultants

Addition to Section 9.4 - Exhibits

February 21, 1980

DOWL Engineers
4040 B Street
Anchorage, Alaska 99503

Attention: Mr. John Paulson

Re: Flood Insurance Study for Valdez, Alaska

Dear Mr. Paulson:

In our telephone conversation of today, you requested information on the status of the flood study that Woodward-Clyde Consultants is conducting for the City of Valdez. The following paragraphs provide this information.

Phase I of the project has been completed. It involved reviewing the Flood Insurance Study conducted for the Federal Insurance Administration and making recommendations to the City on its accuracy and completeness. We found several aspects of the study which were inadequate to accurately describe the flooding potential at Valdez.

Phase II of the project is very near completion. During this phase, field data were collected and reduced on (1) the physical characteristics of the glacier dammed lakes in the drainage basins above Valdez, and (2) the geometry of the Lowe River and Valdez Glacier Stream floodplains. Also during this phase, we provided assistance to the City of Valdez in their appeal of the FIA-sponsored study.

Phase III of the flood study will involve the analysis of data to provide flood estimates and corresponding elevations. This phase is expected to begin this spring and will take roughly 10 months to complete. We do not believe that any results will be available in a time frame to be useful to you in your Environmental Impact Statement.

Very truly yours,

Larry A Rundquist

Larry A. Rundquist, Ph.D.
Senior River Engineer

LAR/jb

ADDITION TO APPENDIX VOLUME I

SECTION - GROUNDWATER HYDROLOGY

The major pump test of the aquifer was performed during summer 1979 on well B-2 at a rate of 1,550 gpm and continued for 48 hours. This test caused approximately 16 ft. of drawdown in the pumped well and about 4 ft. in well B-3, located 50 ft south of the pumped well. After about 10 hour's pumping, the water level in well B-3 had virtually stabilized. No measurable influence was noted in the nearest observation wells tapping the same formation, located north and west of the pumped well (B-1, 650 ft north and A-1, 870 ft west). It was noted, however, that the water level in well B-4, located 550 ft south (downgradient) was drawn down 1.8 ft over the duration of the test. No measureable effects were detected in any of the other wells over the site which tap the upper aquifer.

Transmissivity (T) of the formation was computed using both the straight-line and Theis curve-matching techniques applied to the data from observation well B-3. The results of these computations were 1,860,000 gpd/ft and 1,489,000 gpd/ft, respectively, considerably higher than one would expect of a formation whose specific capacity is in the range of 100 gpm/ft. The rapid initial drop of the water level combined with the very flat time versus water level curve (after the first few seconds) ruled out the use of the straight line method for the determination of Storativity (S). When computed by the curve matching technique, however, a value of $S = 6.63 \times 10^{-14}$ resulted. This value is much too low for even a poor artesian aquifer, thus must not be considered to represent the true conditions.

Computations of T and S based on the drawdown data from well B-4 yielded the following results:

By Straight Line method -

$T = 307,770$ gpd/ft

$S = 0.034$

By Theis Curve-matching method -

T = 262,200 gpd/ft
S = 0.064

Although these "T" values are approximately what one would expect of an aquifer with a specific capacity of 100 gpm/ft, the "S" values are still considerably lower than would be expected of this type of formation.

It is felt that the unrealistically high value of "T" computed from B-3 data, and the low values of "S" were caused by some combination of:

1. A water table formation whose horizontal permeability is grossly greater than its vertical permeability, causing the rapid initial drop when pumping began - a "slow draining" aquifer.

2. Extensive recharge sources are nearby (Slater Creek 800 ft ± east and Glacier Stream 1,700 ft ± west of the pumped well). These recharge sources probably caused, to some degree, the early stabilization of water levels during the pump test. This effect may also have contributed to a flattening of the drawdown curve, possibly increasing the values of "T" which were indicated near the pumped well.

Although the low "S" values and the characteristic shape of the plot of water level versus log time give the impression that the upper aquifer may in fact be a confined or artesian formation, the following factors suggest that that is not the case:

1. During a preliminary pump test on the upper, unconfined, aquifer at well B-3 (production zone 109 to 139 ft below surface) an eight-hour pump test at a rate of 318 gpm caused a drawdown of three ft below the static level. The water level virtually stabilized within approximately 15 minutes after pumping began. It was later discovered that the discharge from this pump test all had percolated into the ground within less than 200 ft from the well. This fact was not detected until the pump test had been completed. It is apparent that the pump discharge was being circulated back to the

water table very near the well, as indicated by the rapid stabilization of pumping level.

2. During the 24 hour pump test of the lower aquifer at well B-3, the discharge of approximately 300 gpm all soaked into the ground within approximately 100 ft of the well. During this 24-hour period, the water level in well B-2, 50 ft to the north which taps only the upper unconfined aquifer, was noted to rise approximately 0.3 feet.

3. No water level fluctuations were noted in the upper aquifer which could be identified as being caused by barometric fluctuations.

4. No confining formation above the aquifer was identified during drilling.

Effects of Long-Term Pumpage

It is recognized that pumpage during winter months when there is no significant recharge to the aquifer will cause a lowering of the water table over the site in addition to the fluctuations which normally occur during the year due to natural causes. If reliable values of "T" and "S" are available, the Theis non-equilibrium well formula may be used to compute the drawdown due to pumpage at any reasonable distance from the pumped well, after any particular duration of pumpage.

Although the values of T and S determined during the pump test were not entirely satisfactory, the values computed from the data from well B-4, 550 ft down gradient from the pumped well, appear to be the most nearly correct, with the error being in the conservative direction. Using those factors, the drawdown to be expected near the headwaters of Corbin Creek (Robe) 5000 ft from the pumped well, is computed to be approximately 2.5 ft over a six month period of pumping during which no significant recharge occurs.

This computation is based on the following assumptions:

1. T and S values computed from well B-4 data by the two methods were averaged: T = 285,000 gpd/ft and S = 0.05.

2. Pumping rate used was 1.7 mgd or 1,200 gpm.

3. Aquifer conditions are reasonably uniform over the site.

4. Since one edge of the site is known to have bedrock boundaries, most likely impervious, the drawdown computed for the typical no-boundary condition was doubled to correct for the influence that these assumed impervious boundaries could possibly have on the drawdown in that area.

is computation should be very conservative, since it is based on a storativity efficient which is unrealistically low. If an "S" of approximately 0.2, which would be more appropriate for the existing conditions were used, the same computations and assumptions would indicate an expected drawdown of approximately 1.2 ft.

In either case the expected drawdown must be viewed in comparison with the natural water table fluctuations which occur over the site. As of March 1980 water level data has been monitored during most of the 1979-1980 winter season. The water table in well B-8 near the south edge of the site has fallen approximately 9 ft between October 1979 and March 1980. Since another 2 ± months remain before significant recharge may be expected, the total drop could be as much as 10-12 ft. It can be seen then that the drawdown expected due to the design pumpage rates would only be an increase of 25 percent or less of the fluctuation which occurs naturally. It would seem that an increase in water level fluctuation of this relative magnitude could have little overall effect on the flow of the groundwater fed streams, Corbin Creek (Robe) and Brownie Creek, which head near the south edge of the site.

As noted in paragraph 2 of the Mitigation Measures section on DEIS p. 189, if the pumpage from the unconfined aquifer on the site were found to be causing significant decrease of the flow rates in the streams (Brownie Creek and Corbin [Robe]) arrangements could be easily and quickly made to replace the flow deficit with groundwater or storm retention water. Although incontrovertable computations cannot be assembled to prove the contentions outlined above, it seems clear that the withdrawal of the design rates from the unconfined aquifer

under the site should cause little or no measurable effect to the groundwater-fed streams in the area.

Zero Recharge Scenario

If a season of almost zero recharge were to occur, it is likely that water levels in the area of the production well could be drawn down dangerously near the well screen. This situation would undoubtedly seriously affect the flow of Corbin Creek (Robe) and Brownie Creek, possibly requiring the tapping of the lower aquifer to make up the flow deficit in those streams. In considering the normal sources of recharge to the unconfined aquifer, however, this possiblity seems rather remote. If very little rainfall were received, it would be expected that less cloudy weather would occur, thus considerably increasing the thawing degree days available for the melting of snowpack and glaciers which feed the streams traversing the area. On the other hand, if the weather were more cloudy than normal, the rainfall would likely be greater than normal, adding to stream flow and recharge. The increased rainfall would also enhance melting of snowpack and glaciers, thus adding to stream flow as well. The only condition which would significantly affect stream flow and recharge would be a drastic change in weather patterns such that little or no melting of the snowpack and glaciers would occur during summer months. Occurrence of this condition has a sufficiently remote possibility of occurrence as to be beyond the scope of this report.

Impermeable Layer Separating Aquifers

Virtually all of the deeper holes drilled over the site encountered a layer of silty sand/sandy silt which is quite firm and quite impermeable. The thickness of this formation varied from approximately 10 ft near the eastern edge of the site to approximately 112 ft near the northern edge of the site at well B-3. In all cases there was a difference in static water level between the permeable materials below the silt and those above. The difference ranged from a minimum of 1-2 ft at B-5 to 27 ± ft at B-3. The pump test performed on the lower formation at well B-3 caused no detectable drawdown of water levels in the upper formation; however, measurable effects were detected in the lower formation over most of the site. The semi-log plot of water level versus log time since pump-

ing began showed indications that the cone of influence encountered impervious boundaries approximately 10 hours after pumping began. These factors point to the conclusion that the upper and lower aquifers are quite thoroughly separated over the entire site, and quite likely over most of the valley. Reviewing the water level data recorded by the monitoring program during the winter months of 1979-1980 indicates, however, that at the locations which are still available for monitoring of the lower aquifer, the decline of its static water level has matched that of the upper aquifer almost precisely. While this correlation could be purely coincidental, it seems more likely that some form of low capacity interconnection exists in the vicinity of the site.

ADDITION TO EIS

ATTACHMENT A - BIBLIOGRAPHY

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Dames & Moore. 1977. Final data report - Subtidal monitoring program for Port Valdez 1976. For: National Marine Fisheries Service, Anchorage.

Nelson-Smith, A. 1972. Oil Pollution and Marine Ecology. Elek Science, London.

III Comments and Responses - EIS

SECTION III

This section responds to comment letters regarding the DEIS received from the public sector and from local, state and federal agencies. All letters are reprinted in their entirety. Letters which do not require a specific response are marked with a box and the words "comment noted." Where further explanation or references are necessary, the comment letter is followed by responses to specific issues which were raised in that letter.

The format of the responses is to briefly restate the nature of the comment; respond to it; restate the next comment from that letter; respond to it, and so forth. The designations "C" and "R" in the margins represent "Comment" and "Response" respectively and are followed by sequential numbers, so that R1 is the response to C1, and so on. The comments also have been numbered in the lefthand margin of the original letter.

Comment letters from the public sector are considered first, followed by letters from local, state, and then federal agencies. The following index provides a listing of the letters received.

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RECEIVED
FEB 1 1980

S.R. Box 5439 L
Knik, Alaska 99687
January 29, 1980

Ms. Deborah Kirk
Environmental Evaluation Branch
Mail Stop 443
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

RE: Environmental Impact Statement - Alpetco Refinery, Valdez, Alaska

Several questions and points for further study have been raised while reviewing the Environmental Impact Statement for the proposed Alpetco refinery in Valdez.

The Alyeska ballast water treatment facility in Valdez has proven to be quite successful in removing the heavier hydrocarbons in the primary separators. Experience with the VMT ballast water plant indicates that 99% of the treatment occurs in the ballast water storage tanks/API separator. The Alyeska plant has not successfully added alum and polyelectrolyte to form floc in the dissolved air flotation basin, but it produces floc quite nicely in the impound basins which were added as an afterthought by A.I. Snow. I suspect that Alpetco will not be any more successful than Alyeska has been in using this technique. I wonder if we could ask Alpetco which chemicals will be used in their actual operation, and whether or not they expect a problem with the desulfibrio bacteria.

C1

The dissolved air process has proven largely successful for removing aromatic hydrocarbons at the Alyeska facility. The dissolved air rapidly saturates with aromatics and "reduces by approximately one-half the remaining fraction of petroleum, which usually corresponds to less than one percent of the total organic load."

Ihor Lysyj, et al., Preprint Paper #77,
1979 Oil Spill Conference, Los Angeles.

I suggest that instead of dissolving a limited amount of

air into the ballast water, that a flotation basin using compressed oil-free air to sparge the ballast the length of the flotation basin be implemented. This process would be an adaptation of a laboratory technique observed by myself and reported by Lysyj, "Determination of
C1 Aromatic and PAH Content of Oily Wastewaters."

Ihor Lysyj and Edward C. Russell, under
U.S. Army Contract DAAK-02-74-C-0311.

This should remove a great deal of the aromatic load for
▲ the RBC.

▼ The ballast water loaded in Parita Bay is at approximately 80°F and when it is processed in Valdez in the summer months, the temperature is closer to 62°F.

I suspect that the winter ballast temperatures will be cooler yet. If we assume that the ballast loaded on the West Coast is in the neighborhood of 60°F, what will the temperature drop to when the ballast is processed at the
C2 Alpetco plant site after settling on shore at Solomon Gulch and then transiting the 5.3 miles of pipeline to the treatment plant?

The efficiency of the RBC should be explored in the 40°F to 60°F ballast water temperature range. It may be necessary to remove the aromatics through some additional pro-
▲ cessing.

▼ The dirty ballast load will be significantly higher in the winter for ships transiting the Gulf of Alaska, segregated ballast or not.

C3 One of the I.M.S. studies indicated that fish could not be maintained alive in the ballast water effluent discharge stream from VMT. (Personal conversation with George Perkins
▲ and Ihor Lysyj, 1978.)

▼ The location of the ballast water diffuser is in the soil deposition zone for the Valdez Glacier Stream and the Lowe
C4 River. "Six of the 2,300 earthquakes have produced significant effects in Port Valdez and on the Valdez Glacier/Lowe River outwash delta. Some of these effects included strong

ground shaking, submarine slides and seiching . . . "

Page 110, DEIS Alpetco, 1979.

"It was also reported that a ship, which was anchored at the mouth of the Lowe River in 1898, was unable to reach bottom at the same location with 200 feet of cable after the 1899 earthquake."

> Page 156, EIS Appendix I, pertaining to the September 3, 1899 earthquake epicenter near Yakutat Bay, the low frequency motion precipitated a massive subaqueous flow slide.

On February 14, 1908, approximately ten years later, another earthquake just north of Port Fidalgo occurred and severed the submarine cables linking Valdez, Sitka, and Seward. No evidence of faulting was shown in Port Valdez so it is currently thought that the cables were severed as a result of the liquefaction of the sediments similar to that which occurred in 1899.

C4

Ibid, Page I-57, EIS Appendix I.

On September 21, 1911, another quake centered between Seward and Whittier occurred and the submarine cables were severed "several seconds after the earthquake stopped."

Ibid, Page I-57, EIS Appendix I.

On January 31, 1912, a fourth quake occurred and the submarine cables were broken.

On February 23, 1925, the submarine cables were severed again.

On March 27, 1964, a massive submarine slide occurred and destroyed the Valdez dock facility. The old townsite appears to be close enough to the Alpetco ballast water diffuser to present a foreseeable failure as a result of a submarine slide due to liquification of the bearing soils.

It appears, after reviewing the data, that the ballast

water diffuser should be moved to a point where it will not be subject to submarine slide induced failure.

C4 As I recall from reading the U.S.G.S. report on the 1964 earthquake, a large area of land between Robe River and the Valdez Glacier Stream dropped four to six feet in elevation. This is probably not a very good area in which ▲ to bury a pipeline.

▼ The recreational impacts from locating the dock facility near Solomon Gulch have not been discussed, nor has the economic impact to the charter boat operators as a result C5 of the lost salmon fishing charters. The institution of an exclusion zone for private boats in this area is to be almost assured to protect the lives and property at the ▲ dock site because of the explosion hazard.

▼ Experience with the tanker loading operation indicates that the greater the number of tanks, the greater the risk of tank overtopping (overfilling). The DEIS attempts to compare the risk of loading 150,000 bbls. into ten large tanks with 145,000 bbls. split into many different, smaller tanks.

C6 Product carriers are generally much smaller than crude carriers and have a greater number of tanks to enable them to transport a larger variety of products.

DEIS, Page 253.

The number of port calls does not equate with the number of tanks, nor with ship age, nor with travel through the Gulf ▲ of Alaska in the treacherous winter months.

DEIS, Page 255.

Please send me a copy of the completed Final Environmental Impact Statement.

Sincerely,

Joseph P. LeBeau

Joseph P. LeBeau

RESPONSE TO COMMENTS BY JOSEPH P. LeBEAU

C1 Comments on page 1 of Mr. LeBeau's letter regarding the Alyeska Terminal experience in the use of alum and polyelectrolite to form floc particles and how it will relate to Alpetco's successful use of these techniques.

R1 Alpetco's proposed treatment system is considerably more sophisticated than that currently in use at Alyeska. The rotating biological contactor (RBC) treatment unit proposed by Alpetco has proven to be an effective activated sludge system. An RBC unit is in operation as part of the best practicable technology effort to achieve effluent standards in a heavy crude refinery in California which is required to meet strict NPDES effluent discharge standards. The RBC is a proven technology and is expected to meet NPDES and State of Alaska receiving water quality standards. Wastewater is pumped into the dissolved air flotation tank and receives a chemical treatment with alum and polyelectrolite. Large diameter, rotating perforated discs are partially immersed in the mixed liquor in each channel of the tank system to provide constant mixing and efficient aeration. The flocculation attainable with aeration discs can help maintain large sludge floc particles which are conducive to solids capture, thus permitting higher mixed liquor suspended solids concentrations. It is expected that the RBC unit will achieve reasonable aromatic hydrocarbon reduction levels. For illustration, the above example west coast plant is removing more than 80 percent hexane solubles and 99 percent phenols to meet all EPA requirements, except for ammonia. Ammonia is generated, rather than consumed as expected, in the biological process.

C2 The efficiency of the RBC should be explored in the 40°F to 60°F ballast water temperature range. It may be necessary to remove the aromatics through some additional processing.

R2 Comment so noted. It is conceivable that heat may have to be added to the ballast water flow prior to treatment.

C3 The dirty ballast load will be significantly higher in the winter for ships transiting the Gulf of Alaska, segregated ballast or not.

R3 Comment so noted. The water treatment plant is sized for the worst case ballasting situation, which is non-segregated tankers during the winter season. The introduction of product tankers with segregated ballast tanks would reduce substantially the ballast water flow to the treatment plant.

C4 Comment from the bottom of page 2 of Mr. LeBeau's letter regarding the location of the wastewater discharge diffuser with respect to risks imposed by seismic activity and submarine slides.

R4 The NPDES permit will require the applicant to submit a report containing all data relative to the determination of dilutions and design and location of the diffuser system at least six months prior to beginning diffuser construction. This will include geotechnical and bathymetric studies. This will allow EPA to determine if reasonable precautions are being taken in the siting in the outfall discharge line.

C5 The recreational impacts from locating the dock facility near Solomon Gulch have not been discussed nor has the economic impact to the charter boat operators as a result of the lost salmon fishing charters. The institution of an exclusion zone for private boats in this are is to be almost assured to protect the lives and property at the dock site because of the explosion hazard.

R5 DEIS Page 102, Paragraph 3, indicates the mouth of Solomon Gulch Creek will be about 609 m (2,000 ft.) from the nearest edge of the proposed products dock facility. This distance is expected to be sufficient to prevent a serious impact on the sport fishing and charter business activities that may occur near the mouth of Solomon Gulch Creek. The U. S. Coast Guard currently imposes a 200 yard safety zone around all tankers at berth at the Alyeska tanker terminal or in transit to or from the dock. The Coast Guard indicates it's reasonable to assume a similar safety zone would be established around the Alpetco products dock. Considering the 2,000-foot distance from Solomon Gulch, the nearest safety zone still would be approximately one-quarter of a mile away.

C6 Comments on Page 4 of Mr. LeBeau's letter regarding tanker loading operations, risk of tank over-topping and variables used in the spill prediction analysis.

R6 The intent of the spill prediction analysis on DEIS Page 253 was not to compare directly the risks of spills from loading crude oil tankers (with fewer numbers of large tanks) to those of loading product tankers (with greater numbers of smaller tanks). Even though the circumstances surrounding the loading of crude tankers versus product tankers differ slightly, there is no other accepted approach that is comprehensive enough to consider all variables involved. Certainly the number and size of tanks in the ships would affect the frequency of loading spills. However, the number of port calls seems the most relevant variable and an analysis based on this fairly represents the spill risks present during loading operations. Ship age certainly would influence this analysis but during the forthcoming time period when the trend will be toward newer and larger product tankers, it can be assumed that not accounting for ship age adds a degree of conservatism to the analysis. The U.S. Coast Guard currently is conducting two studies on the relationship between tanker size and the risk of spills. These conclusions will not be available until 1981.

JAY S. HAMMOND, Governor

OFFICE OF THE GOVERNOR

DIVISION OF POLICY DEVELOPMENT AND PLANNING

POUCH AD
JUNEAU, ALASKA 99811
PHONE: 465-3512

February 21, 1980

RECEIVED
FEB 27 1980
AIR & HAZARDOUS MATERIALS DIV.

Mr. Alex Smith, Acting Director
Air & Hazardous Division
Environmental Protection Agency
Region X
Mail Stop 529
1200 Sixth Avenue
Seattle, Washington 98101

Subject: Alpetco Refinery and Petrochemical Facility DEIS

Dear Mr. Smith:

The State of Alaska has completed review of the subject Draft Environmental Impact Statement (DEIS). The DEIS reflects the coordination which has occurred to date between the Environmental Protection Agency (EPA), Alpetco and the State of Alaska, as coordinated by the Alaska Department of Environmental Conservation (DEC) and the Alaska Department of Natural Resources. The State has appreciated the opportunity to work closely with EPA during the preparation and earlier preliminary reviews of the DEIS. Our comments during this official review make reference to earlier drafts. It should be recognized that many of the State's concerns have been incorporated in the DEIS, and that the following remarks reflect on only the remaining areas of concern.

Besides the following comments which refer to the DEIS document itself, the DEIS, as it reflects EPA's authority to issue its appropriate federal permits [National Pollutant Discharge Elimination System (NPDES) and Prevention of Significant Deterioration (PSD)] for the project, has also been reviewed for consistency with the Alaska Coastal Management Program (ACMP). The State's decision with regard to the project's consistency or not with ACMP will be made later this month when the relevant analyses have been conducted by ADEC, the Alaska Department of Fish and Game (ADF&G) and the Office of Coastal Management (OCM).

HABITAT IMPACTS AND MITIGATION MEASURES:

A large proportion of the necessary mitigation has already been incorporated into both the facility design and the construction and operation plans of the Alpetco facility as a consequence of the Scoping process, formal interagency meetings and informal discussions with Alpetco, and other agency input and review concerning the design of the Alpetco facility. Alpetco has been quite responsive to most recommendations for preventive mitigation. Some mitigatory aspects (i.e., rerouting or

mitigating the effects of the south access road/pipeline corridor, and mitigation of general fish, wildlife, and habitat losses) are requiring considerable ADF&G analysis and review and are being made the subject of separate correspondence. Most mitigation proposed in the DEIS is necessarily general and a final determination of the adequacy of many provisions must await more specific design plans. Insofar as the adequacy of proposed mitigation can presently be evaluated, the general scope is comprehensive. General recommendations for additional preventive mitigation measures are noted under "Mitigation", below. Significant "Technical and editorial comments" for both the main volume and Appendix 1 have also been noted.

Impacts

C1 1. Section 6.3.4, Unavoidable Adverse (Oceangraphic) Impacts, p. 199. The statement "Significant adverse impacts may occur in the immediate vicinity of the diffuser.", which was contained in the preliminary draft but deleted in the DEIS, should be reinserted in the FEIS. Section 6.4 (Wastewater Discharge) provides ample justification for this statement.

C2 2. Section 6.8.1, Unavoidable Environmental (Marine Operation) Impacts, p. 228. The premilinary draft contained the statement "3. Effluents from the refinery and the ballast water treatment facility would increase levels of BOD and dissolved petroleum hydrocarbons in the water immediately surrounding the outfall. Hydrocarbon levels in tissues of organisms such as the clam Macoma balthica living immediately downstream (relative to prevailing currents) of the outfall may increase, potentially causing several subtle impacts." This was deleted from the DEIS. Since this is a very definite probability and a very significant impact, it should be reinserted in the EIS. Moreover, as was noted in our review of the preliminary draft, the statement should be strenthened to include the effects of other waste stream pollutants such as heavy metals.

C3 3. Section 6.8.2, Freshwater Operation Impacts, p. 229. The statement: "Continuous use of fresh water drawn from on-site wells might lower groundwater levels and, consequently, reduce flows in Corbin Creek (Robe) and Brownie Creek." does not adequately emphasize the problem. Operational groundwater use will undoubtedly lower the water table. The Hydrology report estimates a winter drawdown of 6 feet, and presumably this drawdown would occur over a relatively large area surrounding the well. Although drawdown would be considerably less at the southern boundary of the site, there is still a significant probability that drawdown will be sufficient to reduce the availability of groundwater which is the source of both Corbin Creek (Robe) and Brownie Creek. Groundwater provides the sole source of winter flow in the critical Corbin Creek (Robe) coho spawning area. Even a very slight temporary lowering of the water table could readily cause major losses of eggs at the heads of Corbin Creek (Robe) and possibly Brownie Creek.

The DEIS also states (p. 188) that, even though flow could be lost in the upper 200 feet of Corbin Creek (Robe), it would have little if any effect on total downstream flow. The basis for this statement
C3 is not understood. Loss of at least some flow into Robe Lake would seem inevitable. Since the rearing capability of Robe Lake is already stressed to its limit, even a slight flow reduction could produce severe adverse effects to salmonids overwintering in Robe Lake.

4. Section 6.8.2, Freshwater Operation Impacts, p. 231. Additional discussion of the potential for and problems resulting from groundwater pollution is needed. Due to the very high permeability of the soil throughout the area, spills anywhere on the facility site or along the pipeline corridor could contaminate the groundwater system. The potential for pollution is not limited to stream crossings as suggested in this section. Spills from buried pipelines
C4 and in areas where the pollutants have entered the groundwater system are extremely difficult if not impossible to clean up, and provide a source of long-term pollution. Since the groundwater system provides a major source of water input to many streams, particularly Corbin Creek (Robe), Brownie Creek, and Robe Lake, major adverse impacts on spawning and nursery areas could occur. Local residents also use this same groundwater system for their water supply.

5. Sections 6.8.3, Terrestrial Operation Impacts, p. 235. No mention
C5 is made of impacts resulting from fencing along the pipeline corridor. Fences erected to protect the pipeline may also inhibit or preclude wildlife movements and consequently usage of large areas of habitat.

6. Potential conflicts with some fisheries enhancement proposals in eastern Port Valdez are not discussed. For example, the Valdez Fisheries Development Association has been developing plans for a
C6 coho rearing facility at Corbin Creek (Glacier), and various other proposed or potential sites were identified by the ADF&G in its March 1979 report "Fish, Wildlife, and Habitat Resources in Eastern Port Valdez, and Recommendations for Further Study and Monitoring Programs for the Alpetco Refinery."

Mitigation

1. The routing of the south access road is of major concern to the
C7 ADF&G and is still the subject of ongoing discussion with both Alpetco and EPA. Results of those discussions will hopefully be complete in time for inclusion of the State's position in the FEIS.

2. Impermeability of containment dikes and pads underlying tankage and pipelines is a major concern which is not adequately addressed.
C8 All tanks and pipelines which carry potential pollutants should be both surrounded and underlain by impermeable containment barriers. This is particularly important for the products pipelines between the facility and the dock.

C9 3. Leak detection systems for pipelines should be addressed more specifically. Detection systems must be capable of detecting small volume or slow rates of leakage. It is also recommended that the crude supply pipeline be designed to accomodate periodic hydrotesting as a definitive test of pipeline integrity.

C10 4. Present plans call for burying the products pipelines in wetland areas. Since leakage from buried pipeline is particularly difficult to detect and control, and could cause major pollution of the groundwater system, strong consideration should be given to elevating the pipeline in vulnerable areas.

C11 5. Pipeline crossings of anadromous streams (possible mitigating measure #4, p. 186) should be scheduled to coincide with the period between fry emergence/outmigration and adult spawning. For most streams in the Port Valdez area, this period is June 1 to July 15. Inwater work outside of this period could expectedly cause considerable mortality of incubating eggs and/or sac fry. The Lowe River, however, has a relatively low sensitivity between March 1 and June 15 (the river's low water period), and inwater construction would would be permissible in the Lowe River during this period.

C12 6. A buried pipeline crossing of Robe River (discussed in Section 6.8.2, p. 228) is not justified given the fisheries sensitivity of the stream. Even with inwater construction during the June 1 to July 15 time period, fisheries conflicts would be significant with deposition of fines (sediments) in downstream spawning areas. A buildup of silt in downstream spawning areas would lead to increased egg to fry development mortalities. We recommend that the pipeline be elevated above the stream and protected adequately to avoid vandalism problems. An elevated crossing would also allow easy detection of leakage in comparison to a buried crossing.

C13 7. In addition to avoidance of construction impacts, the pipeline should be routed a sufficient distance away from bald eagle nests to preclude disturbance from pipeline surveillance vehicles and activities during operation of the pipeline.

C14 8. Continuous monitoring of groundwater drawdown near the heads of Corbin Creek (Robe) and Brownie Creek should be made a requirement of the water use permit, and plans should include a commitment to mitigate any fisheries problems which may occur due to drawdown. Proposed mitigation, including the feasibility of mitigation, should be addressed in more detail.

C15 9. We do not foresee any measureable conflict with construction work at the products dock near Solomon Gulch Creek. Pile driving should have no appreciable impact on adult migration and/or spawning, and special timing of dock construction work (possible mitigating measure #2, p. 227) should not be necessary.

C16 10. Dredging activity at the temporary barge dock should be scheduled for any time outside of the period April 7 to June 7. Between April 7 and June 7, there is considerable nearshore rearing

C16 activity by juvenile salmonids. It is also recommended that suction dredges not be used in order to prevent fish entrainment problems.

11. Emplacement of containment booms around tanker vessels while in port should be mandatory. The loading facility should be designed
C17 and spill containment procedures developed to prevent the spread of spills, which frequently occur in loading operations, away from the site.

Technical and editorial comments

1. Section 4.3.8, Alternate Transportation Routes Relative to the Site - Pipeline Routes. The discussion of Alpetco's preferred route does not adequately point out the sensitive habitats found along the route. Although the discussion notes only two stream crossings, there will be at least four crossings in the area north of the Richardson Highway: (1) Corbin Creek (Glacier), (2) a tributary to Corbin Creek (Robe), (3) main channel of Corbin Creek (Robe), and (4) Robe River. Moreover, the wetlands and other areas crossed along this route are considerably more sensitive than along the alternative route because contamination of the groundwater in this area could readily pollute Corbin Creek (Robe), Robe Lake, Robe River near its headwaters, and the water supply to Robe Lake subdivision.

C18 This section also states "The preferred pipeline route was selected as having the least direct environmental impact." We do not agree. Alpetco's preferred route would cross a totally undeveloped and sensitive area, whereas two-thirds of the alternate route follows the Richardson Highway and most of the remaining third follows the Valdez Glacier Stream level. Direct disturbance due to construction and operation impacts (siltation, displacement, etc.) will undoubtedly be greater along Alpetco's preferred route, particularly at crossings of Corbin Creek (Robe). The Robe Lake subdivision may also experience considerably more noise disturbance if Alpetco's preferred route is followed. In addition to direct impacts, potential impacts along Alpetco's preferred route are considerably greater than along the alternate route. Carefully developed mitigation measures will be necessary to reduce impacts along Alpetco's preferred route to an acceptable level.

2. Freshwater Aquatic Habitats, p. I-276. Paragraph 4, which states "Attempts to capture juvenile salmon (in Robe Lake) since 1975 have
C19 been unsuccessful..." does not reflect the most recent data. In March of 1978, coho salmon, Dolly Varden, and stickleback were taken under the ice with minnow traps.

3. Freshwater Aquatic Habitats, p. I-227. Paragraph 3 states "The current value of the (Robe) lake to the substantial salmon resources
C20 in the Robe Lake drainage is questionable without further investigation." This statement tends to unnecessarily downplay the importance of Robe Lake. The lake is definitely utilized for rearing,

however, the magnitude of usage has not been adequately assessed. Moreover, Robe Lake provides critical migratory access to Corbin Creek (Robe) and Brownie Creek, both of which are highly important to the overall productivity of the Robe Lake system.

C20

4. Table 5: Fish Stream Summary with Sensitive Time Periods, p. I-285. The moderate sensitivity periods on the streams listed below extends from June 1 to July 15. The rest of the year is highly sensitive with eggs and/or pre-emergent fry in the gravel.

a. Corbin Creek (Robe)
b. Brownie Creek
c. Robe River
d. City Limits Creek
e. City Limits Clough
f. Ess Creek
g. Siwash Creek
h. Loop Road No. 2 Stream
i. Loop Road No. 1 Stream
j. Sewage Lagoon Creek
k. Dayville Flats Creek
l. Solomon Gulch Creek
m. Allison Creek
n. Abercrombie Creek

C21

5. Table 2, Summary of Fry Outmigration Trapping Results, p. I-427. Pink fry catches were lower than chum salmon in two of the four streams checked, but it should be clearly pointed out both on the table and in the text that the low counts of pink salmon fry were the progeny of an even year adult migration. Even year migrations are considerably smaller than in odd numbered years.

C22

Transportation issues

With respect to Air Transportation as discussed on p. 175, paragraph 1 of the DEIS, the State is not aware of any plans to develop an instrument landing system, although VER navigational aids are being considered to alleviate two cancelled operations.

C23

Several surface transportation related issues are identified below:

On p. 250, of the DEIS, paragraph 1 makes a reference to movement of refinery modules weighing 40 to 100 tons (with one unit of 500 tons). Units of up to 75 tons are regulated by State Troopers. Units in excess of this amount must be cleared through the Department of Transportation and Public Facilities with attendant monitoring of the route during movement.

C24

The proposed "Planned Reinforcement" of roadway should be outlined so as a determination can be made as to its adequacy.

On p. 250 of the DEIS, paragraph 3, the statement that the existing highway capacity is 1700 vehicles per hour is misleading. Present capacity is level C which provides stable flow for a maximum of 1400 vehicles per hour under optimum conditions. Existing mitigating factors e.g. interrupted flow, and truck traffic reduce this volume to approximately 800 vehicles per hour. 1700 vehicles per hour on this facility would be level of service D or a condition approaching unstable flow. Clearly this will present a problem that will require careful analysis to avoid conflicts in future traffic movement.

On p. 262-263, several mitigating measures are proposed for the project construction period. Using the DEIS numbering, our comments are:

C24 On number 1, we assume this would be the responsibility of either Alpetco or the construction firm in activity.

For number 3, simply reducing existing speed limits is not sufficient to insure safe intermixing of construction and general traffic. It would be the responsibility of the contractor to insure that an adequate flagging operation was instituted.

For the operating hours of the construction period, suggestion number 1 could be considered.

Suggestion number 2 would be a definite consideration, particularly in light of reducing traffic congestion. However, the responsibilities for capital and operating expenditures would have to be worked out, as well ▲ as the requirements of the operation.

Community and Coastal Management Planning

▼ The City of Valdez has committed itself to taking an active role in preparing for the potential impact of the construction and operation of the Alpetco refining and petrochemical facility. This positive response involves the city's financial participation in necessary capital improvements and services, programmed staff increases and initiation of a local comprehensive plan, coastal management program and revision of zoning ordinances. These varied strategies, among others, are designed to C25 mitigate the anticipated primary and secondary impacts of project activities including increased demands on public services, rapid changes in land use and the prospect of severe housing shortages within the city, both short- and long-term.

Specific comments on the DEIS follow:

P. 172, first paragraph - The statutory reference used is inaccurate. ▲ It should read: Chapter 84, Section 46.40.010-210.

▼ p. 172, second paragraph - It is stated that the district coastal management program is not expected to prevent development within new industrial and C26 residential areas being considered under the comprehensive planning process. This statement needs further explanation. The recently completed Phase I Coastal Management document does not identify any areas in

Valdez as unsuitable for development, but devises a system for classifying land uses for a particular zoning district into three categories: Acceptable - Conditionally Acceptable - Unacceptable. Thus, with development of the Phase II Coastal Management document, the subject lands will be evaluated and the above system will be used to determine allowable land uses.

P. 172, third paragraph - The Alaska Department of Community and Regional Affairs does not approve district coastal management plans. The Department's
C26 role is to provide technical and grant assistance to communities which develop district plans. The district program approval process is briefly as follows: the municipality gives conceptual approval to its district program and submits it to the Alaska Coastal Policy Council; the Office of Coastal Management, Office of the Governor, reviews the document and provides a recommendation to the Council; public comment is solicited and the Council approves or disapproves the program in whole or in part; the Council then submits the program to the State Legislature; the district program goes into effect when the district makes any required
▲ changes in the program and formally adopts it by ordinance.

AIR, LAND & WATER QUALITY ISSUES:

▼ With respect to pollution related matters, the State has identified air, water, and solid waste as potential areas of concern. For activities affecting each of these areas, the State has regulatory responsibility.
C27 Alpetco has applied for the State Air Quality Permit, and a Certificate of Reasonable Assurance under Section 401 of the Clean Water Act. A solid waste permit will also be necessary, but is not germane to the
▲ project at this time and should be applied for at a later date.

There were several inconsistencies between the DEIS and the PSD application, which the DEC reviews while issuing its State Air Quality Control Permit to Operate. We point these inconsistencies out, with other comments on the DEIS, to ensure a consistency between relevant documents pertaining to the Alpetco project.

▼ On p. 21 of the DEIS it states that low Btu gas will be 35% of the plant fuel, on p. 77 it says 25%, in the PSD application on p. 3-15 it said
C28 "major portion," and the December 11, 1979, letter from Alpetco to EPA
▲ reported 25%.

▼ On p. 22 of the DEIS it states that there will be two sulfur recovery
C29 plants <u>each</u> capable of handling <u>all</u> the H_2S. The PSD document does not
▲ describe two such plants, a "large" and "small" plant are indicated.

▼ The DEIS states that SO_2 emissions from the sulfur recovery plant will
C30 be 100 ppm, as does the PSD application. However, the December 11
▲ letter says this is wrong, the SO_2 emissions will be 150 ppm.

▼ On pp. 24-25 of the DEIS is states that in-situ catalyst regeneration
C31 will cause SO_2 emissions of about six tons in about four days. These "extra" emissions, amounting to an increase of 30%, were apparently not

C31 included in the "worst case" impact analysis for the PSD application. This comment is applicable to p. 302 in Appendix Volume II as well.

On p. 33 of the DEIS is a table of estimated annual total pollutant emissions. The PSD application in Table 6.3-2 lists 215 tonsCO/year from the refinery (340 including the power plant), while the DEIS lists 1213 tonsCO/year from the refinery (1335 including the power plant) as
C32 does the November supplement. Total HC emissions in the DEIS and PSD application are listed as 60 tons/year while in November supplement say 828 tons/year are from point sources tanks and terminal activities plus an estimated 190 or 1240 tons/year "fugitive" hydrocarbon emissions from seals, pumps, etc.

On p. 38 of the DEIS the loading rate of anticipated tankers is estimated
C33 to be 120-475 BBL/min (7200-28,500 BBL/hr) while the PSD document at pp. 4-6 indicates the loading rate of a 50,000 DWT tanker is about 40,000 BBL/hr.

On p. 83 and again on p. 84 of the DEIS it states that only National
C34 Ambient Air Quality Standards apply to the project. State Air Quality Standards and PSD increments also apply.

On p. 84 of the March 15, 1978, New Source Performance Standards (NSPS)
C35 for Sulfur Recovery Plants are not included in the discussion of applicable standards included in Subpart J. (p. II-487 does describe these standards). The NSPS for Stationary Gas Turbines are said to be <u>proposed</u>, however they were final on September 10, 1979.

C36 On p. 87 of the DEIS there is no indication that scrubbing will be used to reduce the incinerator's SO_2 emissions.

C37 The flair's steam injection system would be more appropriately described as a control of smoke (products of incomplete combustion).

The Best Available Control Technology (BACT) discussion is very brief
C38 and so general as to provide almost no information, particularly when compared with the wastewater treatment discussion and even the description of dock siting alternatives.

On p. 89 of the DEIS it says construction phase wastes can not be incin-
C39 erated, but will be disposed of in the Valdez landfill which on p. 176 "is nearing capacity." We wonder why incineration to reduce volume was not considered, as Alyeska did. Similar statements appear at pp. 218 and 219.

C40 On p. 219 there is no discussion that more stringent emission controls then those briefly mentioned in 4.43 might be imposed.

C41 Why is "in lieu of open burning" mentioned when pages 89-90 imply no open burning will occur.

C42 On pp. 208-214 PSD increments, and Class I areas are mentioned with no previous discussion to explain these complex aspects. A fairly good

C42 introduction to PSD is given on pp. II-497 and 498 which could be used here. The mention of Class I areas on p. 214 is especially "lonely" since there is no indication of what a Class I area is, let alone where they are or why they were a consideration.

C43 On p. 235 terrestrial mitigation measures don't include the possibility that more stringent emission controls might be imposed. This omission is particularly troublesome since Tables 6.5-1 and 6.5-2 indicate that violations of Air Quality Standards and Increments are possible.

C44 In part F item (15) should have an "X" in the "not yet committed" column since more stringent controls might be imposed.

C45 There was no discussion of odor.

APPENDIX VOLUME II:

C46 P. II-296 Decoking of atmospheric and vacuum crude heaters is said to produce CO, CO_2 and H_2 -- is no H_2O or SO_2 produced?

P. II-486-9 NSPS Discussion

C47 - Why does the Fluid Cat Cracker Unit (FCCU) discussion say opacity is limited to 20% averaged for 5 minutes? ADEC regulations say 20% except for 3 min/hr, NSPS says 30% except for 6 min/hr - the more stringent applies.

C48 - The Steam Generator discussion does not include the opacity standard (NSPS) which applies.

C49 - The Gas Turbine NSPS became effective on September 10, 1979.

C50 P. II-490 it says SO_2 emissions estimates are based on 100% fuel oil as worst case. Nowhere in the PSD application does it say SO_2 emissions are anything greater than from burning process gas (see p. 4-1, 4-9 and November supplement).

C51 The following is the pertinent excerpt of the prepared text delivered at a public hearing on the DEIS in Juneau on January 31, 1980, by the ADEC on the water quality aspects of the proposal:

ADEC "is responsible for establishing and enforcing water quality standards for all state waters. Standards of particular importance in this permit are aromatic hydrocarbons, cyanide, several potentially toxic heavy metals, pH and suspended sediments. Aromatic hydrocarbons shall not exceed 10 ug/l in the water or cause deleterious effects to biota in sediments; toxic substances shall not exceed 0.01 LC_{50} of the most sensitive life stage identified by DEC in the area. Suspended sediments shall not exceed ambient levels at the boundary of the mixing zone. The purpose of the receiving water monitoring program is to ensure that our standards are maintained outside the mixing zone and that the components of the effluent, individually or collectively, do not cause significant alterations in the chemical and biological environment.

"The development of the proposed monitoring program was based on five principles:

"1. A desire to detect any subtle changes in water quality and evaluate the type and magnitude of any sublethal responses of key indicator species chronically exposed to low levels of aromatic hydrocarbons and heavy metals.

"2. To develop the capability to detect and to evaluate gradients in responses of organisms at varying distances from the diffuser.

"3. To utilize the information from previous marine reconnaissance studies in Port Valdez as an aid in selecting representative stations, and subsequently, in developing a more cost effective monitoring program.

"4. To provide for adequate chemical characterization of the sedimentary environment in conjunction with biological sampling, emphasizing compounds with long residence times such as substituted naphthalenes and polynuclear aromatic hydrocarbons.

"5. To provide an improved statistical basis for detecting change by adopting a program of rigorous sampling at a few representative stations rather than broad reconnaissance at numerous stations throughout the Port.

"In developing the specific tasks of the monitoring program which I shall discuss shortly, the department has benefited greatly from previous marine studies in Port Valdez, most notably the preliminary biological investigations of Dames and Moore for the ALPETCO project and those of the Institute of Marine Science conducted to fulfill the monitoring requirements of the ALYESKA ballast water discharge permit. These sampling efforts have isolated certain biological assemblages or station groupings that share several common affinities and have guided us in selecting a few representative stations within these groupings for comprehensive followup.

"The IMS studies, in pointing to the apparent absence of any detectable changes (on a gross, short term level) in community structure and biomass, suggested that gross community changes should be deemphasized in lieu of detecting subtle changes on the individual species level. For this reason, sampling stations in this permit are located as near the diffuser outfall as practicable and address subtidal and intertidal indicator species, keying on major life history events (gametogenesis, spawning periods, growth) while retaining basic abundance and zonation studies.

"With these concepts in mind, the department has endeavored to establish a statistically supportable monitoring program providing the maximum amount of information for the money. The program is designed primarily to provide evidence of any subtle variations in normal species life history functions, be it changes in fecundity, growth, or spawning periodicity of major invertebrates, as a function of distance from the

proposed diffuser. The community studies should provide ample basis for detecting any major changes in community structure. The sampling stations are located on the assumption that the outfall location as proposed in the DEIS will be the ultimate location.

"The monitoring program consists of six main elements:

1. Abundance and zonation studies conducted three times per year at three permanently established muddy intertidal transects, both adjacent and distant from the outfall;

2. Shallow subtidal extensions of these stations, to be occupied at the same frequency;

3. Benthic studies at 5 stations in the far eastern Port with 8 replicate grabs/station;

4. Studies of key biological events in the life histories of selected intertidal and subtidal indicator species, including reproductive phenology and seasonal and animal growth;

5. Hydrocarbon and heavy metal characterization of sediments, water and biota at all biological sampling stations plus a suite of stations very near the diffuser;

6. Assessing the 'condition index' or condition factor of two common bivalve species, one found intertidally and another subtidally.

"This later concept in pollution monitoring is a measure of an organism's overall physiological fitness and is defined as the ratio of the organism's dry weight divided by its shell volume. The index has been used successfully by several researchers in controlled, long-term experiments to evaluate organism response to hydrocarbon stress. We have chosen to apply this relatively inexpensive approach as part of our overall monitoring strategy."

The outstanding issues for the State are the determination of consistency of the major federal permits with ACMP, and the selection of the route for the south access road/pipeline corridor. Work is progressing on both of these issues and we will contact you when the necessary determinations have been made.

We again wish to thank EPA and Alpetco for its coordination with the State during the development of the DEIS. Thank you for the opportunity to comment.

Sincerely,

Bill Ross

Bill Ross, Acting
State-Federal Coordinator

cc: Deborah Kirk, EPA
Glenn Akins, DEC
Richard Logan, ADF&G
Murray Walsh, OCM
Commissioner McAnerney, CRA
Kit Duke, DOT/PF
Dennis Dooley, DOT/PF

RESPONSE TO COMMENTS BY THE STATE OF ALASKA

C1 EIS Section 6.3.4, p. 199, the statement "significant impacts may occur in the immediate vicinity of the diffuser" should be reinserted in the FEIS.

R1 The referenced statement, as contained in an earlier review draft of the EIS, is hereby reinstated in the FEIS.

C2 Comment #2, p. 2 of the comment letter, concerning Section 6.8.1, Marine Operation Impacts.

R2 It was determined that the referenced statement was unnecessary in Section 6.8, as this effect had been discussed previously. Section 6.4, DEIS p. 200-207, discusses wastewater effluents and their potential impact upon organisms such as the clam Macoma balthica existing immediately downstream from the wastewater outfall.

C3 Comment #3 on p. 2 of the comment letter regarding Section 6.8.2, Freshwater Operation Impacts.

R3 See FEIS Section II, p. 31.

C4 On page 3 of the comment letter regarding Section 6.8.2, concerning the potential for problems resulting from groundwater pollution due to spills on the facility site or along the pipeline corridor.

R4 Regarding the potential for groundwater pollution, Section 3.8, DEIS p. 51, discusses containment dikes around tankage, ability to treat contaminated stormwater, leak detection systems for the pipelines and the use of valves in pipelines as major preventative measures. Elevating the product pipeline bundle (see FEIS p. 9 & 15) further reduces the potential for groundwater pollution. These would be used to reduce the potential for, and resulting impact from, spills. Alpetco has further strengthened the integrity of the diking system around tanks by committing in mitigation item B(3), to provide impervious diking and surfacing of areas where haz-

ardous materials are stored (see Section II, p. 46). Section 6.8.2, DEIS p. 230 and 231, also presents predicted risks associated with spills from tanks and pipeline systems. Please refer to FEIS Section II, p. 15-16, for additional discussion that has been added concerning possible problems resulting from groundwater pollution.

C5 EIS Section 6.8.3, Terrestrial Operation Impacts, p. 235. No mention is made of impacts resulting from fencing along the pipeline corridor. Fences erected to protect the pipeline may also inhibit or preclude wildlife movements and, consequently, usage of large areas of habitat.

R5 No fencing is proposed along the pipeline corridor. The only fencing proposed for the project is that shown on Figure 3.3-1 around the perimeter of the plant site itself. There are, however, certain segments of the pipeline (see FEIS Section II, p. 9) which now are proposed to be constructed in an above-ground configuration. This change has been made in response to other concerns. It is not anticipated that these elevated pipeline segments would have a significant impact upon wildlife movement. They do not cross any known migratory routes.

C6 Comment #6, on p. 3 of the letter concerning potential conflicts with some fisheries enhancement proposals in eastern Port Valdez that are not discussed.

R6 The potential project is not considered to be in conflict with sites proposed by the Valdez Fisheries Development Association for coho rearing facilities. The two known sites closest to the proposed project are at Corbin Creek (Glacier) and at Solomon Gulch Creek. If anything, the proximity of the project facilities to these potential fishery sites would increase their attractiveness as coho rearing areas due to the potential for the Alpetco facility to provide a heat and power source which may be desirable in the rearing facility. The proposed project would not be in physical conflict with any of the streams proposed for enhancement in the referenced March 1979 ADF&G report. The EIS assessment of impact upon those existing streams remains the same whether or not the stream eventually is selected for enhancement.

C7 The routing of the south access road is of major concern to the ADF&G and is still the subject of ongoing discussion with both Alpetco and EPA. Results of those discussions will, hopefully, be complete in time for inclusion of the state's position in the FEIS.

R7 Please see FEIS Section II, p. 15, which represents the results of discussions between the State of Alaska, EPA and other interested federal agencies. These discussions were conducted over the past few months while the FEIS was under preparation.

C8 Impermeability of containment dikes and pads underlying tankage and pipelines is a major concern which is not adequately addressed. All tanks and pipelines which carry potential pollutants should be both surrounded and underlain by impermeable containment barriers. This is particularly important for the products pipelines between the facility and the dock.

R8 Please see R4 above. The referenced sections and response in R4 adequately address the potential severity of the problem and available precautionary measures that are proposed. Mitigation measure B(3) indicates that Alpetco is committed to provide impervious diking and surfacing of spill-susceptible areas which should satisfy the concern on tankage in this comment. It is premature in the engineering design phase of this project to discuss details on the design and construction of the dikes. The committment by Alpetco to provide impermeable surfaces on these structures is the best assurance of precautionary measures that can be provided at this time. See FEIS Section II, p. 15 regarding product pipeline design stipulations, and precautions that will be taken against spills.

C9 Leak detection systems for pipelines should be addressed more specifically. Detection systems must be capable of detecting small volume or slow rate of leakage.

R9 See FEIS Section II, p. 11, for the additional statement added to the discussion on leak detection for pipeline systems.

C10 Present plans call for burying the products pipelines in wetland areas. Since leakage from buried pipelines is particularly difficult to detect and control and could cause major pollution of the groundwater system, strong consideration should be given to elevating the pipeline in vulnerable areas.

R10 See FEIS Section II, p. 13-16. The configuration of the pipelines in these areas has been revised to provide for elevated construction.

C11 Comment #5 on page 4 of the letter concerning scheduling construction activities in anadromous fish streams for noncritical periods.

R11 See FEIS Section II, p. 45-49. These time period restrictions have been included in the FEIS mitigation measures and are conditions of the NPDES permit.

C12 Comment #6 on page 4 of the letter concerning a buried pipeline crossing of Robe River not being justified, given the fisheries sensitivity of this stream.

R12 See FEIS Section II, p. 9 and 15. The pipeline configuration in this area has been modified to an elevated crossing, per the recommendation.

C13 In addition to avoidance of construction impacts, the pipeline should be routed a sufficient distance away from bald eagle nests to preclude disturbance from pipeline surveillance vehicles and activities during the operation of the pipeline.

R13 The nearest the products pipeline route comes to existing eagles nests is in an area adjacent to Dayville Road just south of Dayville Flats. Any Alpetco traffic in this area for pipeline surveillance reasons would be very minimal relative to total Dayville traffic. As a result, the effect of Alpetco surveillance on existing eagle nests would be insignificant. Of more significance would be the construction activities on the pipeline, which would be a short-term effect, and general highway traffic increase generated by operation of the Alpetco products dock. Even this general

traffic increase, however, would be small relative to the present daily traffic on Dayville Road.

C14 Continuous monitoring of groundwater drawdown near the heads of Corbin Creek (Robe) and Brownie Creek should be made a requirement of the water use permit and plans should include a committment to mitigate any fisheries problems which may occur due to drawdown. Proposed mitigation, including the feasibility of mitigation, should be addressed in more detail.

R14 Should groundwater drawdown endanger the natural flow in the subject creeks during the low recharge winter season, it would be possible to mitigate fisheries problems this could create. Section 6.2.2, DEIS p. 189, Mitigation Measure #2, discusses the two possibilities for replenishing water in the streams. Both of these methods have been under lengthy consideration from a feasibility standpoint, and the well water technique appears the most likely method of supplying water to the streams. Alpetco has committed to the appropriate mitigation to achieve this. Your comment on the water use permit is noted; however, this would have to be an internal State of Alaska action by the Department of Natural Resources.

C15 We do not see any measurable conflict with construction work at the products dock near Solomon Gulch Creek. Pile driving should have no appreciable impact on adult migration and/or spawning, and special timing of dock construction work (possible mitigation measure #2, DEIS p. 227) should not be necessary.

R15 Comment so noted.

C16 Dredging activity at the temporary barge dock should be scheduled for anytime outside of the period April 7 to June 7. Between April 7 and June 7, there is considerable near-shore rearing activity by juvenile salmonids. It is also recommended that suction dredges not be used in order to prevent fish entrainment problems.

R16 Comments so noted. See FEIS Section II, p. 45-49.

C17 Emplacement of containment booms around tanker vessels while in port should be mandatory. The loading facility should be so designed, and spill containment procedures developed, to prevent the spread of spills which frequently occur in loading operations, away from the site.

R17 We anticipate Alpetco would be required to take similar precautionary measures around their products dock as are being required during the Alyeska tanker loading operations. Spill containment booms are on standby at the Alyeska terminal, but are not deployed as a routine procedure during loading operation. They are mobilized only during a spill incident. This also should be an adequate procedure in the Alpetco spill control plan. Containment booms are more appropriate for crude oil spills, which have widespread dispersion characteristics, than for product spills, which have more limited natural dispersion. Lighter distilled petroleum products dissipate much more readily through evaporation and dissolution than surface dispersion.

C18 Comment #1 under Technical and Editorial Comments, p. 5 of the letter.

R18 The statement on DEIS p. 104 concerning the number of stream crossings on the preferred route was misunderstood. This paragraph was only comparing crossings of resource streams, and the statement read "this route would involve crossing two anadromous fish streams." It is true that there are at least four total stream crossings, but two of these, Corbin Creek (Glacier) and an unnamed drainage tributary, are not fish spawning streams. Regarding the comment on sensitivity of the wetlands, please see FEIS Section II, p. 27 and 44 for further information on mitigation and pipeline alternatives. This section responds to comments on the wetlands as well as those questioning the selection of this route as having the least environmental impact. The right-of-way corridor for the preferred pipeline route was selected intentionally to leave a substantially undisturbed buffer zone between the secondary access road and pipeline route and Robe River Subdivision, specifically to avoid extraneous noise and physical interference during construction. EIS Section 6.6.1 indicates that construction sounds

might be noticeable at Robe River Subdivision, but the effect would not be serious and would be of short duration. This would also be the case if the pipeline were to follow the Richardson Highway route. Operational traffic from pipeline surveillance vehicles would be infrequent and should not be noticeable in Robe River Subdivision.

C19 Freshwater Aquatic Habitats, EIS Appendix Vol. I, p. I-276, paragraph 4 which states "attempts to capture juvenile salmon (in Robe Lake) since 1975 have been unsuccessful..." does not reflect the most recent data. In March of 1978, coho salmon, dolly varden and stickleback were taken under the ice with minnow traps.

R19 The information is appreciated. The conclusions were based on the result of the ADF&G summer sampling program, but did not include information from the winter sampling program. Substantial numbers of juvenile coho were caught in the winter of 1978 and again in 1980, suggesting that Robe Lake does play a significant role as winter coho salmon rearing habitat.

C20 Freshwater Aquatic Habitats, EIS Appendix Vol. I, p. I-227, paragraph 3 states "the current value of the (Robe) lake to the substantial salmon resources in the Robe Lake drainage is questionable without further investigation." This statement tends to unnecessarily downplay the importance of Robe Lake. The lake is definitely utilized for rearing; however, the magnitude of usage has not been adequately assessed. Moreover, Robe Lake provides critical migratory access to Corbin Creek (Robe) and Brownie Creek, both of which are highly important to the overall productivity of the Robe Lake system.

R20 The paragraph was not intended to downplay the importance of Robe Lake to salmon, but rather to point out the lack of data addressing the topic. The lake probably is significant to rearing fish, as stated in the last sentence of paragraph 3. Certainly the lake also is important as a migratory corridor; this fact seemed self evident since the lake is in the path of migrating fish.

C21 Fish Stream Summary with Sensitive Time Periods, EIS Appendix Vol. I, p. I-285, Table 5: the moderate sensitivity periods on the streams listed below extend from June 1 to July 15. The rest of the year is highly sensitive with eggs and/or pre-emergent fry in the gravel (See list A through N in the comment letter).

R21 Comments so noted.

C22 Comment #5 on page 6 of the letter.

R22 Comment so noted.

C23 The state is not aware of any plans to develop an instrument landing system, although VFR navigational aide is being considered to alleviate two cancelled operations.

R23 The statement in Section 5.8.6, DEIS p. 185, regarding the improvement to the airport landing system should read, "A LDA/DME (localizer type directional aide with distance measuring equipment) was installed in 1979."

C24 Comments on p. 6 and 7 of the letter regarding several surface transportation related issues.

R24 These statements are of an informative nature. Emphasis of the issues is appreciated and the comments have been noted.

C25 Regarding DEIS p. 172, 1st paragraph - the statuatory reference used is incorrect. It should read: Chapter 84, Section 46.40.010-210.

R25 The correction is so noted and hereby incorporated in the FEIS.

C26 Comments regarding the District Coastal Management Program.

R26 Clarification on the operation of the District Coastal Management Programs is appreciated; the comments have been noted. Further explanation was requested for the following statement from DEIS p. 172: "The plan is not

expected to prevent development within the new residential and industrial areas identified above, but could affect the siting of individual buildings." The statement is intended to indicate that the Valdez District Coastal Management Program which now is pending final preparation probably will not exclude development within the proposed industrial zone identified by the City of Valdez and within which the Alpetco site is located but that the Program's system for classifying land uses might affect the location of components within the industrial development area.

C27 Alpetco has applied for the state Air Quality Permit and a certificate of reasonable assurance under Section 401 of the Clean Water Act. A Solid Waste Permit will also be necessary, but it is not germane to the project at this time and should be applied for at a later date.

R27 As one of the requirements in the State Royalty Oil Contract regarding submittal of permit applications by December 18, 1979, Alpetco did submit an application for a waste disposal-solid waste management permit on October 16, 1979 to the southcentral regional office of the Department of Environmental Conservation. A waste disposal-solid waste permit to cover the operation and maintenance of a solid waste incinerator was issued on February 2, 1980. Based on Alpetco's current plans, no other activity would require a permit.

C28 On p. 21 of the DEIS it states that low BTU gas will be 35% of the plant fuel, on page 77 it says 25%, in the PSD application on page 3-15 it said "major portion", and the December 11, 1979 letter from Alpetco to EPA reported 25 percent.

R28 The correct number is 25 percent, DEIS p. 21 hereby stands corrected.

C29 On page 22 of the DEIS, it states there will be two sulfur recovery plants, each capable of handling all of the the H_2S. The PSD document does not describe two such plants, a "large" and "small" plant are indicated.

R29 The main refinery sulfur recovery unit consists of two sulfur recovery plants, with both in operation at all times to provide immediate access to

one unit if the other shuts down. Each unit alone is fully capable of treating all of the normal feed.

C30 The DEIS states that SO_2 emissions from the sulfur recovery plant will be 100 ppm, as does the PSD application. However, the December 11 letter says this is wrong, the SO_2 emissions will be 150 ppm.

R30 The EIS should be clarified to indicate that the 100 ppm refers to SO_2 emissions from the Flexicoker tail gas sulfur removal unit, while 150 ppm refers to the SO_2 emissions from the main refinery sulfur recovery plant.

C31 On DEIS p. 24-25, it is stated that in situ catalyst regeneration will cause SO_2 emissions of about 6 tons in about 4 days. These "extra" emissions, amounting to an increase of 30 percent were apparently not included in the "worst case" impact analysis for the PSD application. This comment is applicable to p. 302 and Appendix Vol. II as well.

R31 The comment should read, "these extra emissions amount to an increase of 0.3 percent" not 30 percent, as indicated in the comment letter. An increase of 0.3 percent would not have a significant effect upon the worst case impact analysis for the PSD application.

C32 On DEIS p. 33 is a table of estimated annual total pollutant emissions. The PSD application in Table 6.3-3 lists 215 tons of CO per year from the refinery (340 including the power plant) while the DEIS lists 1,213 tons of CO per year from the refinery (1,335 including the power plant) as does the November supplement. Total HC emissions in the DEIS and PSD application are listed as 60 tons per year, while in the November supplement it is listed as 828 tons per year, from point source tanks and terminal activities, plus an estimated 190 or 1,240 tons per year "fugitive" hydrocarbon emissions from seals, pumps, etc.

R32 The November PSD supplement contains the correct numbers for CO and HC.

C33 On page 33 of the DEIS, the loading rate of anticipated tankers is estimated to be 120-475 bbl/min (7,200 -28,500 bbl/hr) while the PSD document

on page 4-6 indicates the loading rate of a 50,000 dwt tanker is about 40,000 bbl/hr.

R33 The loading rates indicated on DEIS p. 33 are correct.

C34 On page 83 and again on page 84 of the DEIS, it sates that only national ambient air quality standards applied to the project. State air quality standards and PSD increments also apply.

R34 This acknowledges that State Air Quality Standards as well as PSD increments also apply to the proposed project. The referenced statements do not exclude these other standards, but rather serve to introduce a discussion of the four sets of National Air Quality Standards which specifically apply to this project. The state standards are referenced in Section 5.4.2 Existing Ambient Air Quality, DEIS p. 133, and they are listed in Attachment C.

C35 On page 84 of the DEIS the March 15, 1978 New Source Performance Standards (NSPS) for sulfur recovery plants are not included in the discussion of applicable standards included in the subpart J (p.II-47 does describe the standards.) The NSPS for stationary gas turbines are said to be proposed, however, they were final on September 10, 1979.

R35 Comment so noted. The New Source Performance Standards for sulfur recovery plants, as discussed in EIS Appendix II, p. II-47, should be included as part of the NSPS discussion, subpart J on DEIS p. 84.

C36 On page 87 of the DEIS, there is no indication that scrubbing will be used to reduce the incinerator's SO_2 emissions.

R36 Although the primary function of the scrubbing system is to remove particulates, it also would control SO_2 emissions.

C37 The flair's steam injection system would be more appropriately described as a control of smoke (products of incomplete combustion).

R37 Comment so noted.

C38 The best available control technology (BACT) discussion is very brief and so general as to provide almost no information, particularly when compared with the wastewater treatment discussion and even the description of dock siting alternatives.

R38 An extensive report containing additional detailed BACT information was submitted to the State of Alaska, Department of Environmental Conservation in response to their questions on February 20, 1980.

C39 On p. 89, it says "construction wastes cannot be incinerated, but will be disposed of in the Valdez landfill which on page 176 'is nearing capacity'." We wonder why incineration to reduce volume was not considered, as Alyeska did. Similar statements appear on p. 218 and 219.

R39 This statement should be clarified to refer only to those wastes generated prior to completion of the incinerator.

C40 On p. 219, there is no discussion that more stringent emission controls than those briefly mentioned in 4.4.3 might be imposed.

R40 The statement that emissions would be controlled by methods described in Section 4.4.3 was a brief reference to the more detailed discussion in the section, Best Available Control Technology. Air emissions will be controlled by employing BACT as described in this section (see "Revision to Subpart FCCU" in FEIS Section II). This item has been the subject of separate correspondence with the State of Alaska, and is discussed at length in the PSD preliminary and final determinations and technical analysis (see FEIS Section IV).

C41 Why is "in lieu of open burning" mentioned when pages 89-90 imply no burning will occur?

R41 The reference is intended to point out that there are several land clearing methods that could and should be employed in preference to open burning.

C42 On pages 208 through 214, PSD increments and Class I areas were mentioned with no previous discussion to explain these complex aspects. A fairly good introduction to PSD is given on pages II-497 and 498 which could be used here. The mention of Class I areas on page 214 is especially "lonely" since there is no indication of what a Class I area is, let alone where they are or why they were a consideration.

R42 The prevention of significant deterioration (PSD) program is a regulatory program requiring preconstruction approval of new plants with significant potential emissions to be built in clean air areas. PSD air quality increments are numerical limitations that restrict increases of pollution above existing baseline concentrations. One of the chief components of the PSD program is the area classification system. All areas in the country meeting air quality standards are classified according to existing land use and future growth goals as Class I, Class II, or Class III, with varying limitations on growth for each class. The Class I category includes pristine areas such as national parks and wilderness areas, and is subject to the tightest control. Class II covers most of the country attaining the NAAQS and provides for moderate industrial growth. The Act also allows for Class III areas, where the larger PDS increment would allow more intense industrial development. With Valdez being a Class II area, air emissions discharged in this location must meet the specific concentrations relating to that classification. There are not Class I areas close enough to the area to be affected by the proposed project.

C43 On p. 235, Terrestrial Mitigation Measures do not include the possibility that more stringent emission controls might be imposed. This omission is particularly troublesome since Tables 6.5-1 and 6.5-2 indicate that violations of air quality standards and increments are possible.

R43 Regardless of whether more stringent emissions controls might be imposed, the Terrestrial Mitigation Measures will remain the same. If more stringent controls are imposed, the mitigation measures remain on the conservative side.

C44 In part F, item (15) should have a "X" in the "not yet committed" column since more stringent controls might be imposed.

R44 The applicant is required by law to be committed to best available control technology (BACT) regardless of whether more stringent controls might later be imposed.

C45 There was no discussion of odor.

R45 The odors that typically are associated with refineries are caused largely by sulfur compounds. A second, less obvious odor in refineries is caused by aromatic compounds. Odors are caused not solely by the presence of sulfur or aromatic compounds within the refinery, but by their exposure and subsequent emission to the air. Because aromatics tend to be part of the process stream, they are not a major contributor to refinery odors. Normal maintenance that concentrates on spills and leaks coupled with floating roofs on product tanks will control odors from aromatics. Most of the odor associated with refineries is due to two sulfur compounds. One is hydrogen sulfide, produced as a result of desulfurization processes. All hydrogen sulfide-bearing streams are combined and treated in the Claus unit of the sulfur plant, where it is reacted to form elemental sulfur. The presence of hydrogen sulfide emissions in any refinery is rare and must be regarded as an extreme emergency condition. The second sulfur compound present in refineries is sulfur dioxide, which has a characteristic rotten egg odor similar to that of hydrogen sulfide. Sulfur dioxide (and in lesser amounts sulfur trioxide) is a product of burning any fuel that contains sulfur. Sulfur dioxide is therefore present in substantial amounts in any refinery that burns liquid fuels containing sulfur. For this reason, sulfur dioxide is a major contributor to the odors typically associated with refineries. As documented in the sulfur emissions estimates, Alpetco would not normally burn liquid fuels and therefore would have an unusually low sulfur emission rate for a large, highly complex refinery.

C46 Appendix Vol. II, p. II-296. Decoking of atmospheric and vacuum crude heaters is said to produce CO, CO_2 and H_2 -- is no H_2O or SO_2 produced?

R46 All water produced is in the form of steam. Very minor amounts of SO_2 are produced in the approximate range of 6 t/yr.

C47 Appendix II, p. II-26 through 49, why does the fluid cat cracker discussion say opacity is limited to 20% average for 5 minutes? ADEC regulations say 20% except for 3 min/hr, NSPS says 30% except for 6 min/hr -the more stringent applies.

R47 Five minutes is incorrect. It should read three minutes.

C48 Appendix II, p. II-46 through 49, the steam generator discussion does not include the opacity standard (NSPS) which applies.

R48 Opacity is limited to 20 percent averaged for three minutes.

C49 Appendix II, p. II-46 through 49, the gas turbine NSPS became effective on September 10, 1979.

R49 Comment so noted.

C50 Appendix II, p. II-490 says SO_2 emission estimates are based on 100 percent fuel oil as worst case. Nowhere in the PSD application does it say that SO_2 emissions are anything greater than from burning process gas (see page 4-1, 4-9 in November PSD application supplement).

R50 The 100 percent number is incorrect. The PSD application contains the correct information.

C51 The remainder of the comment letter is the pertinent excerpt of the prepared text delivered at the public hearings on the DEIS in January 1980 by the ADEC on the water quality aspects of the project.

R51 The contents of the State hearing testimony is published for information purposes only and no response is warranted.

RECEIVED
JAN 31 1980
EPA-EIS

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
P.O. Box 1628, Juneau, Alaska 99802

1950

January 29, 1980

Ms. Deborah Kirk
United States Environmental
Protection Agency, Region X
1200 Sixth Avenue
Seattle, Washington 98101

In re: M/S 443

Dear Ms. Kirk:

We have reviewed the Draft Environmental Impact Statement for the Alaska Petrochemical Company Refining and Petrochemical Facility, Valdez, Alaska.

No significant adverse effects to adjacent Chugach National Forest lands are expected, other than the potential hazard associated with additional tanker traffic. We have no specific information relating to the facility which would further strengthen the draft.

Thank you for the opportunity to review and comment on this document.

Sincerely,

JOHN A. SANDOR
Regional Forester

COMMENT
NOTED

United States Department of Agriculture
Soil Conservation Service
Professional Center - Suite 129
2221 East Northern Lights Boulevard
Anchorage, AK 99504 (907) 276-4246

January 22, 1980

RECEIVED
JAN 28 1980
EPA, EIS

Donald P. Dubois
Regional Administrator
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Dubois:

We have reviewed your DEIS on the Alaska Petrochemical Company, Refining and Petrochemical Facility, Valdez, Alaska.

We find the DEIS to be well written and documented.

Sterling E Powell
Acting

Weymeth E. Long
State Conservationist

cc: Kenneth L. Williams, Director, WTSC, Portland, Oregon,
Norman Berg, Administrator, SCS, USDA, Washington, D.C.

COMMENT
NOTED

RECEIVED
JAN 25 1980
Office of
REGIONAL ADMINISTRATOR

Advisory Council On Historic Preservation

1522 K Street NW.
Washington D.C.
20005

RECEIVED
JAN 21 1980
EPA, R10

This response does not constitute Council comment pursuant to Section 106 of the National Historic Preservation Act, nor Section 2(b) of Executive Order 11593.

Reply to: P. O. Box 25085
Denver, Colorado 80225

January 15, 1980

Ms. Deborah Kirk
Environmental Evaluation Branch
Environmental Protection Agency
1200 Sixth Avenue, Mail Stop 443
Seattle, Washington 98101

Dear Ms. Kirk:

This is in response to your request of November 1, 1979, for comments on the draft environmental statement (DES) for the Alaska Petrochemical Company's (ALPETCO) proposed Refinery and Petrochemical Facility, Valdez, Alaska.

The Council has reviewed the DES and notes that the Environmental Protection Agency had determined that the proposed undertaking will not affect properties included in or eligible for inclusion in the National Register of Historic Places. Accordingly, the Council has no further comment to make at this time. It is suggested, however, that the final environmental statement contain the Alaska State Historic Preservation Officer's concurrence in the EPA's determination of no effect.

C1

Should you have any questions or require additional information regarding this matter, please contact Mrs. Jane King of the Council staff at (303) 234-4946, an FTS number.

Sincerely,

Louis S. Wall
Chief, Western Division
of Project Review

RESPONSE TO COMMENTS BY THE ADVISORY COUNCIL ON HISTORIC PRESERVATION

C1 The final environmental statement should contain the Alaska State Historic Preservation Officer's concurrence in the EPA's determinaton of no effect.

R1 A letter from the Alaska State Historic Preservation Officer appears in Section 9.4, DEIS page 298. The letter confirms that there are no known properties in the project area which are listed in or eligible for inclusion in the National Register of Historic Places.

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

ALASKAN REGION
701 C STREET BOX 14
ANCHORAGE, ALASKA 99513

RECEIVED
JUL 10 1980
EPA-EIS

Ms. Deborah Kirk
U.S. Environmental Protection Agency
Environmental Evaluation Branch
Mail Stop 443
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Kirk:

We have completed our review of the draft EIS on the proposed Alaska Petrochemical Company facility at Valdez. We offer the following comments for your consideration as you prepare your final EIS.

C1 Section 5.8.6 Transportation Systems, Air, page 175. We suggest that your reference to the landing aid at the Valdez Airport be rewritten as follows: "A LDA/DME (Localizer type Directional Aid with Distance Measuring Equipment) was installed in 1979."

C2 6.5 Air Quality Visibility Effects, page 211. Since the proposed site appears to be less than one mile east of the Valdez Airport and the prevailing wind is described as being from the northeast from October through April, we suggest that the paragraph on visibility effects be expanded to include comments on any potential impacts on visibility at the airport.

Thank you for the opportunity to review and comment on your draft EIS.

Sincerely,

ROBERT J. BALDWIN
Chief, Planning and Appraisal Staff

RESPONSE TO COMMENTS BY U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

C1 We suggest that your reference to the landing aide at the Valdez airport be rewritten as follows: "A LDA/DME (localizer type directional aide with distance measuring equipment) was installed in 1979."

R1 Comment so noted. The reference on DEIS p. 175 hereby is changed to the above wording.

C2 Since the proposed site appears to be less than one mile east of the Valdez Airport and the prevailing wind is described from the northeast from October to April, we suggest that the paragraph on visibility effects be expanded to include comments on any potential impacts on visibility at the airport.

R2 The discussion on DEIS p. 211 and 213 describes potential air quality visibility effects and concludes that the impact on visibility should be relatively minor. This conclusion also applies to potential impacts on visibility at the airport. No impairment of aircraft activity is expected.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-4335

March 6, 1980

RECEIVED
MAR 21 1980
REGIONAL ADMINISTRATOR

Mr. Donald P. Dubois
Regional Administrator
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Dubois:

The Department of Commerce reviewed the draft environmental impact statement by the Environmental Protection Agency relative to the "Alaska Petrochemical Company, Refining and Petrochemical Facility, Valdez, Alaska", and forwarded comments to you in our letter of February 13, 1980.

Since that time, additional information has developed which is pertinent to the project. This additional information from the National Oceanic and Atmospheric Administration is enclosed for your consideration.

We are pleased to have been offered the opportunity to review this statement.

Sincerely,

Bruce R. Barrett

Bruce R. Barrett
Acting Director
Office of Environmental Affairs

Enclosure Memo from: Mr. Harry L. Rietze
National Marine Fisheries Service
PP/EC - NOAA

RECEIVED
MAR 14 1980

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 1668
Juneau, Alaska 99802

Rec'd 3/5/80 PP/EC

Date : February 4, 1980

Reply to Attn. of:

To : PP/EC - Joyce M. Wood

From : F/AKR - Harry L. Rietze

Subject: Comments on Draft Environmental Impact Statement - Alaska Petrochemical Company Refining and Petrochemical Facility, Valdez, Alaska. EPA

The Draft Environmental Impact Statement for the Alaska Petrochemical Company Refining and Petrochemical Facility (ALPETCO) at Valdez, Alaska, has been received by the National Marine Fisheries Service for review and comment.

The statement has been reviewed and the following comments represent our suggested response to the Environmental Protection Agency.

GENERAL COMMENTS

We believe the DEIS identifies the major anticipated impacts associated with the construction and operation of a refinery in Valdez. The operational constraints and mitigative measures described in the statement should reduce these impacts. We believe that two activities not described at length in the DEIS are highly important to the safe construction and operation of the project. These are the development of an oil spill contingency plan and establishment of an interdisciplinary team to review plans for all stream crossings. We assume input from NMFS and other resource agencies will be sought during the development of these two matters.

C1

SPECIFIC COMMENTS

Volume I

1. Introduction

1. Project History

C2 Page 1, paragraph 1. The term "grassroots" refinery should be defined.

2. Purpose and Need

C3 Page 4, paragraph 2. This section should describe the five thousand barrel discrepancy between crude oil input and total daily refined product output, and the eventual fate of this material.

3. Proposed Project

3. Land Requirements and External Appearance

4. Pipelines

C4 Page 14, paragraph 2. We believe this section should elaborate on the specific design and route of the product line. Figures depicting the route of the line and the crossing sites for Corbin Creek (Robe), the Robe River, the Lowe River, and Abercrombie Creek should be presented.

C5 Additionally, a Site Preparation section should be included under Proposed Project which describes planned river diversions, canals and dikes in some detail.

4. Refinery Processes

3. Control of Waste Streams

C6 Page 26, paragraph 5. The reference to contaminated storm runoff should be expanded to define what contaminants could be involved. Physical separation of oil and grease from this water may not be an acceptable method of treatment in certain cases. This section should identify a snow removal disposal site and discuss treatment of runoff from this site.

8. Spill Prevention and Control

C7 Page 51, paragraph 4. Containment dikes should be discussed in detail, including specific assurance that diked impoundments would have the capacity for containing all petroleum products plus record amounts of rainfall or snowmelt runoff. Inadequate dike capacity has been a common cause of pollution in other locations where tanks or lines have ruptured.

4. Alternatives

3. Plant Design Alternatives

7. Alternate Products Dock Sites

C8 Page 102, paragraph 6. The research plans for FY 1982 by the NOAA office of Marine Pollution Assessment may not be implemented and would have no specific relationship to the proposed ALPETCO project. The paragraph should be rewritten to reflect the above information.

5. Existing Conditions

6. Ecosystems

General. This section presents many concepts and discussions which have been over-simplified or inaccurate. Source references are often lacking, and much of the material is not relevant to the subject of potential environmental effects of the proposed refinery. We offer the following to assist in its revision.

C9 Page 140, paragraph 2. Much of this section describes the entire Port Valdez area, and the boundaries of the "study area" should be extended to the west.

1. Elements of the Ecosystem

C10 Page 141, paragraph 1. Variations in barnacle densities vary more by rock surface texture (smooth vs rough), local differences in aspect relative to wave impact (creating a localized shearing effect of waves and wave born debris) and differences in the intensity of predation by starfish (Evasterias) and snails (Thais). The assertion that sea star abundance is dependent on salinity is questionable, especially for Evasterias troschelii, one of the most common species. Seasonal variations in densities also depend to a great extent on mortality rates.

C11 Page 141, paragraph 2. Observations by the NMFS indicate that kelp cover may vary from 100 percent in some areas to 0 percent in others. The range of "15 to 55 percent" should be documented and clarified.

C12 Page 141, paragraph 3. There is a large assemblage of filter-feeders on the Dayville Flats at the east end of Port Valdez, including mussels and filter-feeding polychaetous annelids. The mollusk, Macoma balthica, which is very abundant, is a filter-feeder as well as a deposit-feeder.

C13 Page 141, paragraph 4. A Dungeness crab population supports an important recreational fishery and formerly supported a small commercial fishery.

C14 Page 142, paragraph 4. Alexander is not listed as a reference in Appendix A.

C15 Page 142, paragraph 5. Smith and Stoker is not listed as a reference in Appendix A.

C16 Pacific herring spawn on Fucus around the perimeter of Port Valdez. All salmon species except kings spawn in Port Valdez streams and occur seasonally as both juveniles and adults. Anadromous salmon are not normally considered to be either "pelagic" or "marine" and their importance in Port Valdez is not adequately stressed in the paragraph.

C17 Page 144, paragraph 2. The last paragraph on page 143 describes primary productivity in Port Valdez as "impressively high," while the next paragraph on page 144 calls primary productivity within Port Valdez "low." This discrepancy should be clarified or corrected.

The statement that primary productivity is low may not apply to the salt marsh ecosystem near the landward end of the estuary. Salt marshes are generally considered to be highly productive systems. The paragraph seems to imply that all of Port Valdez should be classed as low in primary productivity. Some Port Valdez sites, such as the salt marsh and the Mineral Creek flats with abundant mussel beds, are examples of highly productive systems. Many energy inputs to estuaries are terrestrially derived and detrital material is not necessarily bound up in the sediments but provides microorganism enrichment which contributes to the food supply of deposit-feeders.

No evidence is presented that the Port Valdez estuary is low in productivity. Statements are apparently based on the assumption that because light in the marine environment is seasonally limited by glacial flour from streams during the late spring and summer months phytoplankton blooms must be inhibited, therefore resulting in low primary production. The rapid growth of abundant marine benthic macro-algae during the winter months when glacial flour is absent is not recognized. Spring phytoplankton blooms occur prior to the drop in water transparency caused by glacial runoff in Port Valdez.

C17 The statement that low-levels of primary productivity reflect low species diversity is not necessarily correct. It does not follow that one is related to the other; in fact a substantial body of recent evidence suggests that productivity and diversity are negatively correlated. The frequency of population reduction is a more important influence on diversity.

An example of a highly productive system within Port Valdez is the Dayville mudflats, where densities of the Macoma balthica are equal to some of the highest reported in the literature, exceeding 5,000/m^2, and densities of harpacticoid copepods are equivalent to those on productive tideflats in southern British Columbia.

▼ Page 144, paragraph 3. Benthic suspension feeders (e.g. mussels) filter
C18 phytoplankton as well as suspended organic matter so the two systems are not necessarily sharply divided. Mussels are abundant at many intertidal sites
▲ in Port Valdez.

▼ Page 144, paragraph 4. Dabbler ducks, geese, and marine snails should be
C19 added to the list of animals which use the marshes and mudflats extensively.

4. Commercial, Recreational, and Subsistence Use of Systems

▼ Page 155. No mention of subsistence activity, per se, occurs here.
C20

8. Socioeconomics

5. Land Use

▼ Page 164. paragraph 3. The statement concerning a major decline in fish
C21 stocks is not true. Fish stocks are cyclical and there is no evidence that Prince William Sound is any less productive than it ever was. A record run
▲ and commercial catch of pink salmon occurred in 1979.

6. Environmental Consequences

3. Oceanography

2. Operation Effects

▼ Page 197, paragraph 2. Transport of dissolved hydrocarbons should be discussed
C22 in addition to surface slicks, since refined products, high in water solubles, would be the main potential source of spills from the product dock area.
▲ Absorption to bottom sediments should be discussed, as it is on p. 226, para. 4.

4. Wastewater Discharge

1. Impacts of Wastewater Discharge

C23 Page 200. We believe this section should discuss the existing Alyeska effluent discharge, addressing how it differs from the proposed ALPETCO discharge, and the potential for additional environmental impact caused by the combined discharge and possible synergistic effects (since the Alyeska effluent moves counter-clockwise in Port Valdez toward the vicinity of the ALPETCO diffuser discharge point.)

C24 Page 204, paragraph 2. Oil and grease method is not an adequate method for measuring total hydrocarbons. Effluent should be characterized by Gas Chromotography, including heavy metals, total aromatic hydrocarbons, total monoaromatics, total polyaromatics, and individual compounds benzene, toluene, xylene, napthalene, etc.

C25 Page 204, paragraph 5. Accumulation of hydrocarbon, Ni (Nickel), and other heavy metals in sediments around the diffuser is likely to occur, providing the potential for accumulation in the food web.

C26 Page 207, paragraph 1. Flatfish do not actively avoid petroleum hydrocarbons.

8. Ecosystems

1. Marine

C27 Page 220, paragraph 5. There is an error in the sentence which ends at top of p. 221. Salmon do not spawn April to mid-May in Solomon Gulch Creek. Perhaps the statement was intended to refer to fry migration from the stream.

C28 Page 225, paragraph 5. Reproductive stages of macro-algae are sensitive to low-levels of hydrocarbons.

7. Mitigation Measures

2. Monitoring Programs

General. This section on monitoring should be specifically cross referenced to Attachment B, Draft NPDES, pp. B-36-B-57 (especially p. B-55 describing intertidal monitoring).

C29 A requirement for ALPETCO to provide funds for monitoring would be desirable, since NMFS is no longer being funded by the U.S. Fish and Wildlife Service to continue the intertidal monitoring. Perhaps future costs could be shared by ALPETCO and Alyeska; this is implicit in the NPDES.

C30 Attachment B; p. B-55, 56, 57. The provision for monitoring biological populations and water quality is excellent. We suggest that an additional point be added to 2, a. (2). Biological Studies of Individual species line 5, as follows: ...and (c) mortality, including quantitative estimates of the abundance and distribution populations of Macoma and associated organisms, and comparisons with previous estimates gathered over the past 10 years at the NOAA/NMFS Dayville monitoring site."

We suggest this addition for the following reasons: Recognition of sublethal effects of effluent based only on changes in health is only correlative evidence, dependent on coincidence of health changes with increases in toxic substances in the tissues of organisms. Correlation does not necessarily prove that the toxic substances are responsible for a change in health. A hypothetical example of this problem would be a decline in growth rate of Macoma and an increase in toxic substances in the tissues, when the decline in growth was the result of reduction of the food supply available to the organisms, i.e., toxic substances reduced the bacterial or plankton populations the clam utilizes for food without directly affecting the clam.

C30 It is therefore important to monitor the abundance and distribution of the population (not only the health of individuals). For example, the clams may surface due to the presence of a toxic substance and disappear as a result of predation. The only useful evidence in such a case would be data which show a decrease in abundance coinciding with an increase of refinery-derived substances in the environment.

Annual and seasonal population estimates at the NOAA/NMFS site from 1970-79 show a remarkably stable population of large Macoma at the higher tidal elevations. With this backlog of data, any later change in the abundance or distribution of the clam population would be measurable, and studies to determine the cause could be implemented. (See Attachment B; p, B-55 in Section 2, a. (2) under mortality.)

C31 Sufficient leeway should be incorporated in the permit to initiate additional studies on particular aspects of the biology of the mudflat community to evaluate changes in population abundance or health of individuals within reasonable limits in terms of time and cost.

C32 Page B-56. Reference - Stekoll, Clement and Shaw.

C33 Page B-56. Add: "Macoma shall be . . . from the Old Valdez dock to an intertidal location near the diffuser."

C34 Page B-57. (2). We suggest specifying Mytilus edulis or Limanda aspera (yellowfin sole) as additional species. NMFS has previous data from Port Valdez on hydrocarbon levels in these species.

C35 Page B-57. Footnote 2, paragraph 1. (Lees, et al.) is missing.

CLEARANCE: SIGNATURE AND DATE:

F/HP:JWRote

RESPONSES TO COMMENTS BY U. S. DEPARTMENT OF COMMERCE,
NATIONAL MARINE FISHERIES SERVICE

C1 We believe that two activities not described at length in the DEIS are highly important to the safe construction and operation of the project. These are the development of an oil spill contingency plan and establishment of an interdisciplinary team to review plans for all stream crossings. We assume input from NMFS and other resource agencies will be sought during development of these two matters.

R1 In the mitigation measures summary, items 26 and 30 on DEIS p. 269-270 and items D(1) and E on FEIS p. 47 and 48, Alpetco is committed to develop both of these plans. Both matters must include input from NMFS and other relevant resource agencies.

C2 The term "grassroots" refinery should be defined.

R2 A grassroots refinery is an entirely new facility built from the ground up as compared to the modification or expansion of an existing refinery.

C3 Section 2.1 should describe the 5,000 barrel discrepancy between crude input and total daily refined product output, and the eventual fate of this material.

R3 The proposed facility would process 150,000 bpd of crude oil into approximately 145,000 bpd of refined products. The by-product fuels burned for energy requirements in the plant account for the discrepancy of 5,000 barrels per day. Most of the fuels burned in the plant are not commercially marketable from this location.

C4 Section 3.4.1, p. 14, we believe this section should elaborate on the specific design and route of the product line. Figures depicting the route of the line and the crossing site for Corbin Creek (Robe), the Robe River, Lowe River and Abercrombie Creek should be presented.

R4 The right-of-way corridor shown on Figure 3.2-2, DEIS p. 9, indicates the route of the product pipelines and crude supply line. Figure 3.3-5, DEIS p. 16, shows the sizes, functions, and configurations of the pipeline in both the buried and elevated modes. A leak detection system is planned as are cutoff valves at important stream crossings (see FEIS Section II, p. 11). It is premature to present more definitive engineering design on the pipeline system at this time. The pipeline system would cross Corbin Creek (Robe) and the Robe River in an elevated mode and cross the Lowe River and Abercrombie Creek in a buried mode (see FEIS Section II, p. 15).

C5 A site preparation section should be included under the proposed project section which describes planned river diversions, canals and dikes in some detail.

R5 EIS Attachment B (p. B-114 and B-115) shows a map of the proposed flood control levee, drainage, ditching and proposed diversion of Slater Creek. There are also cross section details showing a method proposed for construction of these items. It is premature to present more definitive engineering designs at this time.

C6 The reference in Section 3.4.3, DEIS p. 26, to contaminated storm runoffs should be expanded to define what contaminants could be involved. Physical separation of oil and grease from this water may not be an acceptable method of treatment in certain cases. This section should identify a snow removal disposal site and discuss treatment of runoff from the site.

R6 Physical separation alone of oil and grease from contaminated storm water would not be an acceptable degree of treatment. However, this effluent then would pass through the biological treatment system (see Wastewater Treatment Flow Diagram, Figure 3.4-3, DEIS p. 32) which would complete the treatment process and would meet the effluent limitation requirements. The contaminants in the storm water runoff are similar but are present in lesser amounts to those in other waste streams in the refinery and could consist of anything from oil and grease to a wide array of hydrocarbon materials. It isn't normally of great concern to know exactly what all the

constituents are because the skimmers, separators and biological treatment system will treat this influent to acceptable standards. The snow that falls within the process area and is susceptible to contamination would be melted rapidly due to escape heat from the refinery systems. Consequently, this snowfall would be handled as contaminated storm runoff, rather than bulk snow removal. Snow removed from non-contaminated areas would be disposed of in the area identified for snow storage on Figure 3.3-1, DEIS p. 10.

C7 Containment dikes should be discussed in detail, including specific assurance that diked impoundments would have the capacity for containing all petroleum products, plus record amounts of rainfall or snowmelt runoff. Inadequate dike capacity has been a common cause of pollution in other locations where tanks or lines have ruptured.

R7 The project description is revised to state that impervious containment dikes would be provided with provisions for additional rainfall and snowmelt capacity as stated in your comment (see FEIS Section II, p. 11). The engineering and construction details that would be employed to achieve this criteria are not yet identified. The lack of cohesive, relatively impervious clay-type soils in the Valdez area, which would be a key element in conventional dike construction, will necessitate detailed consideration for alternate construction techniques for these containment dikes. For this reason particularly, it is premature to know the detailed method of design and construction of the dikes.

C8 Regarding EIS Section 4.3.7, p. 102, the research plans for FY 1982 by the NOAA Office of Marine Pollution Assessment may not be implemented and would have no specific relationship to the proposed Alpetco project. The paragraph should be rewritten to reflect the above information.

R8 Thank you for the information on this item. The statement in the EIS was intended only to acknowledge that a possibility exists that a relevant monitoring program would be undertaken. No specific relationship to the Alpetco project should be implied.

C9 EIS Section 5.6, much of this section describes the entire Port Valdez area and the boundaries of this study area should be extended to the west.

R9 The descriptions in Section 5.6 of Existing Conditions in the described study area would also apply in part to other locations in the greater Port Valdez area. Because the specific study effort, and especially the field observations and sampling, were intended for and done in only the described study area, it would be inappropriate and possibly inaccurate in some selected cases to extend the study boundaries west, which would suggest that the description applies to the entire Port Valdez area with the same degree of confidence as the original study area.

C10 Comment from page 3 of the letter concerning DEIS p. 141, paragraph 1.

R10 Your comments have been noted and the paragraph has been rewritten to accommodate the comments. See FEIS Section II, p. 22.

C11 Page 141, paragraph 2: Observations by the NMFS indicate that kelp cover may vary from 100 percent in some areas to 0 percent in others. The range of "15 to 55 percent" should be documented and clarified.

R11 The original statement, "Kelps visually dominate with about 15 to 55 percent cover depending on the season" is hereby modified for clarity to read "In those areas where kelp are present, they visually dominate with seasonal averages ranging from 15 to 55 percent cover." Please see FEIS Section II, p. 22.

C12 Page 141, paragraph 3: There is a large assemblage of filter-feeders on the Dayville Flats, including mussels and filter-feeding polychaetous annelids. The mollusc, Macoma balthica, is a filter-feeder as well as a deposit-feeder.

R12 Thank you for the information. The second sentence of that paragraph has been modified for clarity. Please see FEIS Section II, p. 23.

C13 Page 141, paragraph 4: A Dungeness crab population supports an important recreational fishery and formerly supported a small commercial fishery.

R13 The DEIS p. 156 indicates a minor subsistance fishery exists for Dungeness crab and halibut. However, the following sentence should be added to the referenced paragraph for clarity: "Dungeness crabs also are present and support a significant recreational fishery."

C14 Alexander is not listed as a reference in Appendix A.

R14 The reference is inserted in the FEIS. See Section II, p. 57.

C15 Smith and Stoker is not listed as a reference in Appendix A.

R15 The reference is inserted in the FEIS. See Section II, p. 57.

C16 Page 142, paragraph 5: Pacific herring spawn on Fucus around the perimeter of Port Valdez. All salmon species except kings spawn in Port Valdez streams and occur seasonally both as juveniles and adults. Anadromous salmon are not normally considered to be either pelagic or marine and their importance in Port Valdez is not adequately stressed in the paragraph.

R16 The importance of salmon species was not intentionally overlooked in this discussion; rather, since project related concerns deal primarily with the spawning and rearing grounds of the salmon, the salmon discussion is presented under the section on freshwater systems. However, further reference in this section and mention of the herring would be appropriate, and the paragraph has been revised accordingly. Please see Section II, p. 24.

C17 Page 144, paragraph 2: Concerning primary productivity in Port Valdez.

R17 The referenced discussion on primary productivity is somewhat confusing. The matter has been clarified with a revision which appears in Section II, p. 25.

C18 Page 144, paragraph 3: Benthic suspension feeders such as mussels filter phytoplankton as well as suspended organic matter, so the two systems are not necessarily sharply divided.

R18 The intent was not to suggest a sharp division between the systems. The first sentence of that paragraph should be qualified to read as follows: "Energy pathways in Port Valdez are divided into two primary systems." Please see FEIS Section II, p. 25.

C19 Page 144, paragraph 4: Dabbler ducks, geese, and marine snails should be added to the list of animals which use the marshes and mudflats extensively.

R19 Thank you for the information. The first sentence of the referenced paragraph has been expanded. Please see FEIS Section II, p. 26.

C20 Page 155: No mention of subsistence activity per se occurs here.

R20 Subsistence activity is mentioned at the top of DEIS p. 156. Recreational use is much more important than subsistence; therefore, there is little need to stress subsistence aspects.

C21 Page 164, paragraph 3: The statement concerning a major decline in fish stocks is not true. Fish stocks are cyclical and there is no evidence that Prince William Sound is any less productive than it ever was. A record run and commercial catch of pink salmon occurred in 1979.

R21 Please see FEIS Section II, p. 30, for a revision of the referenced paragraph.

C22 Page 197, paragraph 2: Transport of dissolved hydrocarbons should be discussed in addition to surface slicks, since refined products, high in water solubles, would be the main potential source of spills from the product dock area. Absorption to bottom sediments sould be discussed as it is on p. 226, paragraph 4.

R22 Given the present level of knowledge about the action of refined products in seawater and about the transport of dissolved hydrocarbons, together with the extreme variability of spill circumstances, we feel that further qualification or quanitification is not possible with any degree of reliability. It seems reasonable to assume that the same factors which affect surface slick movement would play a role in the transport of refined products. The possibility of absorption to bottom sediments is not discussed in this section because the section concerns itself only with the effects of spills as they relate to circulation. The effects of spills on living organisms, due to such factors as absorption to bottom sediments, appropriately appears in the section concerning impacts on marine organisms (DEIS p. 220-228)(See also FEIS Section III, p. 86, item R17).

C23 DEIS p. 200: This section should discuss the combined Alyeska and Alpetco discharges and any possible synergistic effects.

R23 The two discharges are nearly two miles apart. Considering the average daily discharge volume for the two facilities, the distance between them and the size and flushing characteristics of the receiving waters, it is not expected that the total effects of the two discharges would be any greater than the sum of the two parts. Further study of this possibility would not be warranted.

C24 Page 204, paragraph 2: Oil and grease method is not an adequate method for measuring total hydrocarbons.

R24 True. However, the referenced paragraph addresses only oil and grease, and is not intended as a discussion of the treatment technology for total hydrocarbons. The NPDES permit establishes limitations for numerous effluent consitituents and establishes monitoring and reporting requirements to ensure these standards are achieved. The permit also requires use of gas chromatography/mass spectrophotometry for measuring total hydrocarbons. Please see the Draft NPDES permit in Attachment B, pages B-37 - B-67, particularly p. B-47, and the final permit in Section IV, FEIS p. 160.

C25 Page 204, paragraph 5. Accumulation of hydrocarbon, nickel, and other heavy metals in sediments around the diffuser is likely, providing potential for accumulation in the food web.

R25 The topic of toxic materials in the sediments versus benthic organisms and subsequent food web transfers is adequately discussed on pages 205-206 under the heading, "Overall Ecological Impacts." Exposure to nickel is mentioned specifically in Section 6.4.3.

C26 Page 207, paragraph 1: Flatfish do not actively avoid petroleum hydrocarbons.

R26 Comment noted.

C27 Page 220, paragraph 5: There is an error in the sentence which ends at the top of p. 221. Salmon do not spawn April to mid-May in Solomon Gulch Creek. Perhaps the statement was intended to refer to fry migration from the stream.

R27 Thank you for the comment. That statement indeed was intended to refer to the period of out-migration of fry. Pink salmon spawn there from late June to late August with activity peaking in late July.

C28 Page 225, paragraph 5: Reproductive stages of macro-algae are sensitive to low levels of hydrocarbons.

R28 Comment noted.

C29 This section on monitoring should be specifically referenced to Attachment B, draft NPDES permit.

R29 The discussions indicate air and qater quality monitoring will be according to provisions of the NPDES and PSD permits. Final versions of these permits appear in Section IV of this FEIS. Monitoring discussions in the NPDES permit begin on p. 167. PSD compliance monitoring is discussed on p. 232. Alpetco is required to develop and implement the studies in Section E

of the NPDES permit and Approval Condition 5 of the PSD permit. Alpetco will bear the costs of the development and implementation of the monitoring program.

Remaining comments in the letter concern the draft NPDES permit, and the responses are contained in Section IV. Please see p. 152.

United States Department of the Interior

OFFICE OF THE SECRETARY

P. O. Box 120
Anchorage, Alaska 99510

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WATER DIVISION

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February 8, 1980

Mr. Donald P. Dubois
Regional Administrator
Environmental Protection Agency
1200 6th Avenue
Seattle, Washington 98101

RECEIVED
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OFFICE OF
REGIONAL ADMINISTRATOR

Dear Mr. Dubois:

In response to your recent request, we have reviewed the Draft Environmental Impact Statement for Alaska Petrochemical Company's (ALPETCO) Refinery Complex and Support Facilities.

In terms of overall content, we believe the Draft Environmental Impact Statement sufficiently addresses most of the environmental issues of concern to this department. However, there are certain sections of this statement in which we believe additional information should be provided. We offer the following specific comments for your consideration.

▼ Section 3.5.3 (Page 37) Pipeline System:

C1 ▲ It should be clarified whether the crude oil pipeline, between the Alyeska Pipeline connection and the point of intersection with the products line bundle, will be above ground or buried.

▼ Section 3.5.4 (Page 38) Products Dock:

C2 ▲ We suggest this section be expanded to discuss where oil, fuel and/or ballast water will be temporarily stored. We believe it best that petroleum products be stored within the site complex and not on the products dock. Dock storage of petroleum products would increase the chance for spills and/or leakage caused by seismic activity within the port.

▼ Section 3.5.5 (Page 39) Transportation - Marine:

C3 ▲ We believe the length of the tidelands lease should be discussed. The Corps of Engineers' Public Notice (Port Valdez 85) states that a portion of the dock will be removed; it will not be reverted to city ownership as indicated in the statement. Clarification of this issue is needed. We recommend that the final statement include an assessment of the environmental damage which may result in removing the dock, should this be an alternative.

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Section 3.8 (Page 51) Spill Prevention and Control:

C4 Paragraph two mentions specific design parameters involved in spill prevention. This section should be expanded to consider installing emergency shut-off valves at all stream crossings.

C5 The contingency plan for spills does not include spillage of hazardous solid waste products (i.e. sulfur, spent catalyst) being removed from the plant site. We suggest that the plan be expanded to include procedures to handle possible spillage of solid waste between the plant site and the waste disposal site (or manufacturer, if returned).

Section 4.3.4 (Page 88) Alternate Methods of Solid Waste Disposal - Available Disposal Techniques:

C6 This section should be expanded to discuss whether hazardous waste disposal sites are planned within the Valdez area. We recommend that if a hazardous waste disposal site is needed that it be located within the plant perimeter and away from streams intersecting the perimeter boundary. Containment barriers should be constructed around all liquid hazardous wastes.

Section 4.3.8 (Pages 103-104) Alternate Transportation Routes:

C7 We believe design criteria for each alternative should be included in this section. This is particularly important for Alternative #3 which concerns a major floodplain. Design criteria for the bridge and access road from the Glacier Stream Haul Road to the plant site should be discussed in detail.

C8 We believe Alternative #2 would be the most environmentally acceptable route. This route would utilize the existing levee off the Richardson Highway, adjacent to the east side of Valdez Glacier Stream, and eliminate the need for a bridge across Valdez Glacier Stream and its floodplain. However, if the primary access route (Alternative #3) is selected, pertinent flood control design criteria should be included for review.

C9 We believe the discussion on pipeline crossings should be expanded. Time of crossing, spawning areas, and siltation should be fully discussed. We recommend that stream crossings be conducted between 1 June and 15 July so as not to disrupt fry emergence and spawning activities. Construction work (in-water) outside of this time period could result in extreme sedimentation in the downstream spawning areas which would seriously inhibit aeration within the spawning gravel. In addition, we recommend elevating the pipeline crossing of the Robe River above the stream or rerouting it to alleviate severe siltation within a major spawning area.

We suggest you consider the feasibility of an alternative route for the pipeline bundle. A possible route would be Alternative #2, paralleling our proposed access route along the existing levee, via the Richardson Highway. In-water construction would be permissible in the Lowe River between 1 March and 15 June due to the reduced water flow during this period.

Section 5.2.2 (Page 120-122) Groundwater:

▼ The final statement should utilize data that can be derived from tests (such as the test pumping described on page 121) to determine the hydraulic characteristics, especially coefficients of transmissivity and storage, for the unconfined aquifer. From these characteristics, the ultimate drawdown over a season of almost zero recharge or over the life of the facility could be calculated. The reported four feet of drawdown at a distance of fifty feet from a well pumping up to two thousand gallons per minute for 72 hours is somewhat characteristic of a slow-draining, unconfined aquifer; this
C10 figure does not necessarily indicate the ultimate effects of operating withdrawals.

The nature, thickness, and probable distribution of materials between the confined and unconfined aquifers (pages 120-122), as indicated by logs of wells and test holes, should be discussed. This would permit an evaluation of the significance of leakage between the aquifers. Aquifer characteristics based on the testing mentioned (page 122) should be included to permit evaluation of the potential
▲ for impacts.

▼ Section 5.3.5 (Page 127) Sedimentology:

The dilution and discharge studies conducted do not seem adequate to explain effluent movement. It is understood that studies were only
C11 conducted when stratified conditions existed. We believe that dye plume tests should be conducted in winter, when the water column is not stratified, to predict effluent dispersal. This would give a better indication of dispersal when the water column is not well
▲ mixed.

Section 5.6.1 (Page 146-147) Elements of the Ecosystems:

▼ Information on primary productivity in the Valdez Glacier Stream is lacking and assumptions are inferred by the following statement contained in the draft: "Detailed information on ecosystem struc-
C12 ture is lacking. Production of the plants and stream dwelling invertebrates can be assumed to be small." We believe the assessment of the biological factors inherent in this stream should be
▲ expanded in the final statement.

▼ It is mentioned in the draft statement that the Lowe River should be considered highly productive, yet components of the system, except
C13 for spawning data, are poorly known. The statement that "...biological communities are probably well-developed" should be explained. We suggest that the procedures for assessing riverine ecosystems be
▲ discussed.

C14 Section 5.6.4 (Page 156) Commercial, Recreation, and Subsistence Use of Systems - Terrestrial:

We suggest that the statement address the appropriateness of restricting the discharge of firearms within a specified radius of the plant site, pipeline routes, and products dock to lessen the chance of damage to the system and possible environmental contamination. High powered rifles may have the potential to puncture the products and crude oil pipeline (this has been the case concerning the Alyeska pipeline).

C14

▲

▼ Section 5.8.5 (Page 173) Land Use - Land Use Planning:

Reference is made to a one-year study to refine the Department of Housing and Urban Development - Federal Insurance Administration maps concerning flood potential and the 100-year floodplain. It should be further discussed as to how the new information will be used.

C15

▲

▼ Section 5.8.7 (Page 176) Utilities Systems - Solid Waste:

It is mentioned that ALPETCO may utilize the city's landfill site for some non-hazardous solid waste. Since the present city landfill is nearing capacity, we suggest that alternative disposal measures be discussed.

C16

▲

▼ Section 6.1.2 (Page 179) Long Term Effects:

In the event of an earthquake, liquefaction in the area of the pipeline system may result in a great risk to the environment. The draft statement seems to circumvent this problem by suggesting several mitigation measures which could be implemented. We believe these after-the-fact measures do not adequately address the initial liquefaction problem. We suggest that you provide more detail regarding this concern.

C17

▲

Section 6.4.1 (Page 200) Impacts of Wastewater Discharge:

▼ This new operation will begin without knowledge of specified pollutant concentrations in the discharge. This makes it extremely difficult to assess potential impacts to fish and wildlife resources or to recommend specific stipulations. The best practical technology (in effluent design) as required by the Environmental Protection Agency does not insure protection of marine resources, Pollutant loading in Port Valdez may present a very real threat in future years. We suggest the statement indicate what baseline studies, monitoring, and review will be accomplished to help understand the ongoing cause and effect relationships the introduced contaminants will have on the estuarine system.

C18

The estimated concentration of ammonia would probably cause no significant harm to fish or wildlife, but should it be at or nearly at the daily limitations specified we would have cause for concern. Toxicity of ammonia has been demonstrated to increase with increased salinity. Therefore, it is believed that standard accepted ammonia concentrations may be too high for sufficient protection in the

marine environment. Even if a sufficiently high dilution factor is achieved along the boundaries of the mixing zone, the ammonia concentrations, if at or near the discharge level limit presently proposed, would exceed accepted safe levels. We therefore suggest you discuss the modification of allowable discharge limits for ammonia.

C18 Chromium may also approach toxic limits, in which case we would again be concerned. Not only has chromium been reported toxic to a variety of marine flora and fauna, it has also been reported to be bioaccumulative. Cyanide concentrations in the water column should not exceed 5 mg/l.

We strongly urge that bioassays be conducted to determine maximum allowable concentrations of these compounds. We suggest that these ▲ key concerns be addressed in the final document.

▼ Section 6.5 (Page 208) Air Quality:

Conflicting ideas exist concerning potential impacts from air pollutants due to industrial emissions. We believe there is a need for further study in this area. Knowledge about SO_2 loading, particulate problems, and related contaminant impacts in the Valdez area C19 can only be termed "speculative." The Department of the Interior, through the Fish and Wildlife Service's Office of Environmental Contaminant Evaluation, has proposed baseline studies to examine the air contamination issue. The objectives of this study are outlined in the Department of Interior's comments regarding the Prevention of Significant Deterioration permit application. This proposed study ▲ should be addressed in the final statement.

▼ Section 6.8.1 (Page 223) Marine - Construction Barge Dock:

It is important that timing for construction be compatible with C20 salmon spawning and rearing in adjacent streams. Dredging should not occur between 7 April and 7 June. We also believe it important that dredging be performed by "clamshell" dredge and that spoil material be deposited at a specified upland site. We suggest these ▲ points be discussed in this section.

▼ Section 6.8.2 (Page 229) Freshwater - Operation Impacts:

The continuous use of water drawn from on-site wells may lower groundwater levels, thus affecting the amount of available water in C21 Corbin Creek (Robe) and Brownie Creek. No information on groundwater was obtained during the winter. This period is critical to the survival of salmon eggs in these two streams. We recommend that the groundwater study be expanded to assess the impacts of groundwater fluctuations during the winter months. ▲

Section 6.10.6 (Page 246) Land Use - Recreation:

▼ The Draft Environmental Impact Statement appears to be incomplete in C22 its discussion of project related impacts to existing and/or planned

recreational opportunities at or adjacent to the proposed facility, products dock, and construction barge dock. The final statement should identify any recreation impacts (including mitigation measures and the enhancement of recreatopn opportunities), or clearly state that there are none. For example, the Lower Solomon Gulch Falls, adjacent to the proposed products dock, is recognized as a major scenic resource. However, there is no clear indication of the degree of impact, if any, that the project will have on those who wish to visit the resource. The potential impacts to recreational boaters from the increased marine traffic associated with the construction and operation of the project should also be discussed.

C22

▲

We believe the draft adequately addressed cultural resources.

Additional Departmental comments will be provided by the U.S. Fish and Wildlife Service after review of the Corps of Engineers Section 402 and Section 10/404 permit applications. These comments will be mainly concerned with roadway/pipeline access routes, construction barge dock, wastewater outfall pipe, and stream diversions. As we have indicated in our above review comments, we believe more detailed information is needed on these aspects of the proposed project. For your convenience, we are also attaching an outline identifying the key points for which additional information is needed in order for us to complete our review of the permit applications, Please send this information to the Area Director, U.S. Fish and Wildlife Service, 1011 East Tudor Road, Anchorage, Alaska 99503.

Thank you for the opportunity to comment on this draft statement. We hope our comments will be helpful when preparing the Final Environmental Impact Statement.

Sincerely,

Paul D. Gates
Regional Environmental Officer-Alaska

Enclosure

The referenced attachment concerns Sections 10 and 404 permits and is reprinted and responded to in Section IV. Please see p. 255.

RESPONSE TO COMMENTS BY THE U.S. DEPARTMENT OF THE INTERIOR

C1 It should be clarified whether the crude oil pipeline, between the Alyeska pipeline connection and the point of intersection with the products line bundle, will be above ground or buried.

R1 The crude oil supply line would be buried from the Alyeska pipeline connection to the Richardson Highway, and would be elevated from the Richardson Highway to the plant site.

C2 We suggest this section be expanded to discuss where oil, fuel and/or ballast water will be temporarily stored. We believe it best that petroleum products be stored within the site complex and not on the products dock. Dock storage of petroleum products would increase the chance for spills and/or leakage caused by seismic activity within the port.

R2 All tankage would be located on-site with the possible exception of two small tanks which might be located onshore near the products dock site. These two tanks would be for the purposes of accumulating slop oil skimmed from ballast tanks during deballasting operations and of functioning as a surge tank for the deballasting system. All storage of crude oil, refined products, or ballast water would be located on-site. There would be no storage facilities on the products dock.

C3 We believe the length of the tidelands lease should be discussed. The Corps of Engineers public notice (Port of Valdez 85) states that a portion of the dock will be removed; it will not be reverted to city ownership as indicated in the statement. Clarification of this issue is needed. We recommend that the final statement include an assessment of the environmental damage which may result in removing the dock, should this be an alternative.

R3 The length of the tidelands lease at the site of the products dock according to the lease application submitted to the Alaska Department of Natural Resources on September 26, 1979, is a period of 25 years or until expira-

tion of the term of the Alpetco royalty oil contract, which is anticipated to be June 2005. The tidelands lease with the City of Valdez for the construction barge dock would expire upon completion of construction of the proposed plant. Upon expiration of the construction barge dock lease, ownership of the dock would revert to the City of Valdez as indicated on DEIS p. 39. This updates information to the contrary in the Corps of Engineers, Section 10, permit application.

C4 Paragraph 2, Section 3.8, mentions specific design parameters involved in spill prevention. This section should be expanded to consider installing emergency shut-off valves at all stream crossings.

R4 The above-referenced paragraph discusses the "appropriate use of valves to minimize potential oil spills." This does refer to the use of shut-off valves at stream crossings. Please see FEIS Section II, p. 11. It is premature in the planning phase of the project to know the specific design parameters and methods of operation of the valves and detection system.

C5 The contingency plan for spills does not include spillage of hazardous solid waste products (i.e. sulfur, spent catalyst) being removed from the plant site. We suggest that the plan be expanded to include procedures to handle possible spillage of solid waste between the plant site and waste disposal site (or manufacturer, if returned).

R5 The spill prevention, control and countermeasure plan is to include measures for all possible types of spills including those mentioned above.

C6 Section 4.3.4 should be expanded to discuss whether hazardous waste disposal sites are planned within the Valdez area. We recommend that if a hazardous waste disposal site is needed, it be located within the plant perimeter away from the streams intersecting the perimeter boundary. Containment barriers should be constructed around all liquid hazardous space.

R6 There are no hazardous waste disposal sites planned within the Valdez area for the proposed facility. See Section 4.3.4, DEIS p. 87, for the current status on an Alaska State Hazardous Waste Management Program.

C7 We believe design criteria for each alternative transportation route should be included in Section 4.3.8. This is particularly important for Alternative No. 3 which concerns a major floodplain. Design criteria for the bridge and access road from the Glacier Stream Haul Road to the plant site should be discussed in detail.

R7 It is premature in the normal development of the project to have detailed engineering design criteria for the transportation route alternatives. The screening process which led to selection of a preferred route was based on several parameters discussed in Section 4.3.8. One exception is the design criteria which would govern the primary access road and bridge across Valdez Glacier Stream. As discussed in paragraph 3, DEIS p. 183, the road and bridge for the stream crossing would be designed and constructed to be consistent with the guidelines of the HUD Flood Insurance Program. This program currently restricts construction of any facility which would raise the elevation of the base (100-Year) flood more than one foot at any point in the community. The bridge span would be designed to pass the maximum expected spring runoff flow, and the bridge approach roads would be designed at an elevation to allow flood waters to pass over the top of the roadway before water exceeds the HUD flood level increment.

C8 We believe Alternative No. 2 would be the most environmentally acceptable transportation route. This route would utilize the existing levee off the Richardson Highway, adjacent to the east side of Valdez Glacier Stream, and eliminate the need for a bridge crossing across the Valdez Glacier Stream and its floodplain. However, if the primary access route (Alternative No. 3) is selected, pertinent flood control design criteria should be included for review.

R8 See FEIS Section II, p. 13-16, and response R7 above.

C9 Regarding last two paragraphs on page 2 of the comment letter which discuss pipeline stream crossings and pipeline bundle routes.

R9 Comments on recommended stream crossing time periods are so noted. See Section II, p. 45-49, Mitigation. The recommendation regarding elevating

the pipeline crossing above Robe River is so noted and has been done.

C10 Page 3, paragraphs 1 and 2 regarding groundwater and hydraulic characteristics.

R10 See FEIS, Section II, p. 51-56.

C11 The dilution and discharge studies conducted do not seem adequate to explain effluent movement. It is understood that studies were only conducted when stratified conditions existed. We believe that dye plume tests should be conducted in winter, when the water column is not stratified, to predict effluent dispersal. This would give a better indication of dispersal when the water column is not well mixed.

R11 The field data that was collected does represent the stratified condition during the summer of 1979. However, the model that was run incorporates this data and previous data that were collected by the Institute of Marine Science, including data regarding unstratified conditions. The most critical state would be during the summer stratified conditions. It should be noted that during the winter (nonstratified conditions), the water column is well mixed. Regarding further study in predicting effluent dispersal, the NPDES permit requires the applicant to submit a report containing all data relative to the determination of dilutions and the design and location of the diffuser system six months prior to beginning diffuser construction. The permit also requires the permitee to develop and implement a study which will measure the actual diffusion and dispersion characteristics achieved by the outfall diffuser system no more than three months after start-up of the refinery facility.

C12 Information on primary productivity in the Valdez Glacier Stream is lacking and assumptions are inferred by the following statement contained in the draft: "Detailed information on ecosystem structure is lacking. Production of the plants and stream dwelling invertebrates can be assumed to be small." We believe the assessment of the biological factors inherent in the stream should be expanded in the final statement.

R12 Valdez Glacier Stream has no flow during winter, reaches its peak flows in approximately June or July and has variable but generally diminishing flows throughout the rest of the year. The streambed is cobble with very little silt deposition occurring. The stream is heavily laden with glacial silt and is opaque. This rather harsh physical environment has not allowed the establishment of a significant biological community. The stream is not used for spawning, nor as a migratory passage for spawning fish. There are no marshes associated with this stream, nor are attached macro algae present in the river. Primary productivity has been assumed to be small because of the severely limiting physical conditions.

C13 It is mentioned in the draft statement that the Lowe River should be considered highly productive, yet components of the system, except for spawning data, are poorly known. The statement that ". . . biological communities are probably well developed" should be explained. We suggest that the procedures for assessing riverine ecosystems be discussed.

R13 Lowe River is considered productive because of its spawning values and the extensive shellfish community at its delta. The direct effects on the river system from the proposed project are rather limited and have been discussed in the EIS and the technical appendices. Appropriate mitigation measures have been adopted. The discussions concerning procedures used to evaluate the natural environment of this area are contained in the Appendix Vol. I.

C14 We suggest that the statement address the appropriateness of restricting the discharge of firearms within a specified radius of the plant site, pipeline routes, and products dock to lessen the chance of damage to the system and possible environmental contamination. High powered rifles may have the potential to puncture the product and crude oil pipelines.

R14 Action has been taken by the City of Valdez to remove the most immediate firearm threat to the proposed facility. The present firing range located south of the plant site is in the process of being moved to a new, safer location. Any further restrictions would be the responsibility of the appropriate state or local authorities.

C15 Reference is made to a one-year study to define the Department of Housing and Urban Development - Federal Insurance Administration maps concerning the flood potential and the 100-year floodplain. It should be further discussed as to how the new information will be used.

R15 The ongoing flood study being performed for the City of Valdez by Woodward-Clyde Consultants will not be concluded or arrive at any conclusions prior to publication of this Final EIS. See the letter on p. 50, Section II, indicating the status of the study. Ultimately, the height and configuration of the flood control levee could be altered by the results of this study.

C16 It is mentioned that Alpetco may utilize the city's landfill site for some non-hazardous solid waste. Since the present city landfill is nearing capacity, we suggest that alternate disposal measures be discussed.

R16 Section 6.7.1, DEIS p. 218, discusses the action the City of Valdez is taking to provide for future municipal solid waste disposal needs including those Alpetco needs the city has committed to handle.

C17 In the event of an earthquake, liquefaction in the area of the pipeline system may result in a great risk to the environment. The draft statement seems to circumvent this problem by suggesting several mitigation measures which could be implemented. We believe these after the fact measures do not adequately address the initial liquefaction problem. We suggest that you provide more detail regarding this concern.

R17 In EIS Appendix I, p. I-81, paragraphs 2 and 3, the potential for a liquefaction condition is described in terms of the fine-grained soils and high water table. This issue was raised most importantly because these conditions are prerequisites for liquefaction under strong seismic ground shaking. There is, however, no known evidence of previous liquefaction in the immediate vicinity of the pipeline route into the plant. The area that is theorized to have experienced previous seismically induced liquefaction is located approximately 4,000 ft up Corbin Creek (Glacier) from the pipeline route. This issue was raised to indicate the prudence of later per-

forming a more detailed soils design study to establish safe design criteria for pipeline construction in this area. If the area is determined to be sufficiently susceptible to liquefaction, safe construction is not precluded but rather subjected to more restrictive design standards.

C18 The last two paragraphs on page 4 and the first three paragraphs on page 5 of the comment letter regarding impacts of wastewater discharge.

R18 See FEIS Section IV, p. 150, item R2.

C19 Fourth paragraph on p. 5 of the comment letter regarding potential impacts from air pollution due to industrial emissions.

R19 The Department of the Interior through the Fish and Wildlife Service office did not comment on the Prevention of Significant Deterioration (PSD) permit application. The baseline studies proposed to examine the air contamination issue in general were not presented. See letter in Section IV, p. 187, regarding their statement on air quality.

C20 It is important that timing for construction be compatible with salmon spawning and rearing in adjacent streams. Dredging should not occur between 7 April and 7 June. We also believe it important that dredging be performed by clam shell dredge and that spoil material be deposited at a specified upland site. We suggest these points be discussed in this section.

R20 Comment so noted. See FEIS, Section II, p. 45-49, Mitigation Measures.

C21 The continuous use of water drawn from on-site wells may lower groundwater levels, thus affecting the amount of available water in Corbin Creek (Robe) and Brownie Creek. No information on groundwater was obtained during the winter. This period is critical to the survival of salmon eggs in these two streams. We recommend that the groundwater study be expanded to assess the impacts of groundwater fluctuations during the winter months.

R21 See Section 6.2.2, DEIS p. 188, regarding winter season observation of groundwater levels. See FEIS Section II, p. 51-56, for results of those observations.

C22 The draft Environmental Impact Statement appears to be incomplete in its discussion of project related impacts to existing and/or planned recreational opportunities at or adjacent to the proposed facility, products dock, and construction barge dock. The final statement should identify any recreation impacts (including mitigation measures and the enhancement of recreation opportunities), or clearly state that there are none. For example, the lower Solomon Gulch Falls, adjacent to the proposed products dock, is recognized as a major scenic resource. However, there is no clear indication of the degree of impact, if any, that the project will have on those who wish to visit the resource. The potential impacts to recreational boaters from the increased marine traffic associated with the construction and operation of the project should also be discussed.

R22 The site for the proposed facility has been a relatively inaccessible wilderness area. The main recreational values in the general vicinity would be possible occasional hunting on-site, and use of the Valdez Glacier Wayside campground located across Valdez Glacier Stream from the northwest corner of the proposed plant site. The plant site would no longer be available for hunting; however, it is not currently known for its sport hunting value. Primary impacts on the campground would be increased traffic on the access road, and visual and noise effects noted in Section 6.6.1, DEIS p. 215. There are no present recreational opportunities at the construction barge dock site. Lower Solomon Gulch Falls is valuable for its scenic view. The products dock facility would not interfere with access to this scenic resource; however, access would experience temporary interruption during the construction period. The net increase in vessel traffic in Port Valdez would be 128 vessels per year, or one every 2.8 days. This number considers the decrease which would occur in tanker traffic calling at the Alyeska Terminal to haul an equivalent amount of crude oil from Valdez. This is a relatively small increase in traffic and is well within the Coast Guard navigational control system in Valdez. It is not expected to impose significant impacts on recreational boaters in the harbor.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
REGIONAL OFFICE
ARCADE PLAZA BUILDING, 1321 SECOND AVENUE
SEATTLE, WASHINGTON 98101

January 24, 1980

REGION X
Office of Community Planning
and Development

IN REPLY REFER TO:
10C

RECEIVED
JAN 25 1980
EPA-EIS

Ms. Deborah Kirk
Environmental Evaluation
Branch, M/S 443
U.S. Environmental Protection
Agency
1200 Sixth Avenue
Seattle, Washington 98101

Dear Ms. Kirk:

Re: Draft Environmental Impact Statement
Alaska Petrochemical Company
Valdez, Alaska

We have reviewed the impact statement issued on December 7, 1979.

Your impact statement adequately covers our areas of concern. Your statement will be sent to our office in Anchorage so that they will be fully aware of the impact on housing that is described in the statement. The statement also notes the impact on floodplains and wetlands, however, does not mention the need for compliance with Executive Order 11988 and Executive Order 11990. It may be appropriate to review the eight step process and to indicate in the final statement that the process has been or will be complied with prior to project implementation.

C1

Thank you for the opportunity to comment.

Sincerely,

for Robert C. Scalia
Director
Regional Office of CPD

cc: John Duffy / with copy of impact statement
Newton Chase

RESPONSE TO
COMMENTS BY U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT,
OFFICE OF COMMUNITY PLANNING AND DEVELOPMENT

C1 The DEIS does not mention the need for compliance with Executive Order 11988 and Executive Order 11990. It may be appropriate to review the eight-step process and to indicate in the final statement that the process has been or will be complied with prior to project implementation.

R1 The above mentioned eight-step process is contained in the "Water Resources Council, Floodplain Management: Guidelines for Implementing Executive Order 11988 (43 CFR Part VI)." The same guidelines apply to EO 11990, Protection of Wetlands; however, EO 11990 does not apply to this agency's proposed action (pursuant to EO 11990 Section 1(b)). Nonetheless, the order was used in guiding the analyses and, in effect, has been complied with. The DEIS, this Final EIS and the subsequent Record of Decision will satisfy fully the requirements of EO 11988 and the guidelines.

The eight steps, simply stated, are: determine if the proposed action is in a floodplain; provide for public review; identify and evaluate alternatives; identify impacts; minimize impacts and restore and preserve the natural conditions of the floodplain or wetlands; reevaluate alternatives; provide for public explanation of the findings; and implement a decision based upon the above steps. Step 7 - Findings and Public Explanation, identifies nine issues which an agency must address. The relevant discussions appear throughout the Draft and Final EIS documents under appropriate headings and are summarized below.

1) Describe why the action must be located in a floodplain: Due to size requirements and terrain limitations there were no suitable non-floodplain alternative sites in Valdez.
2) Describe the significant factors which were considered including alternative sites and actions: Much of the material contained in the Draft and Final EIS documents is pertinent, particularly Sections 4.1 and 4.2.

3) Indicate whether the actions conform to applicable state or local floodplain protection standards: There currently are no applicable state or local regulations; however available draft programs currently under review were used as design criteria. The final floodplain programs should be available during detailed design of the facility. The facility design would comply with those programs.

4) Indicate why National Flood Insurance Program criteria are demonstrably inappropriate for the proposed action: Not applicable.

5) Provide for publication in the Federal Register or other appropriate vehicle: Notice of availability of the DEIS appeared in the December 7, 1979 Federal Register; in addition, public notices appeared in newspapers, and hearings were conducted, in Anchorage, Juneau and Valdez.

6) Provide for a brief comment period: In this case, comments on all issues in the DEIS were accepted for inclusion in the FEIS from December 7, 1979, to February 16, 1980.

7) Describe how the action will be designed or modified to minimize harm within or to the floodplain: Mitigation measures pertinent to floodplain aspects of this project appear in Section II of this FEIS. Design features relative to floodplain considerations are discussed in various sections of the EIS.

8) Indicate how the action affects natural or beneficial floodplain values: Wetlands in eastern Port Valdez provide waterfowl habitat and function as sources of groundwater recharge and as links in the food chain. Some habitat and groundwater recharge losses would be expected at the immediate project site, where wetland areas would be altered or lost by the proposed project, but the effects are anticipated to be minor. Please see Section II of this FEIS, p. 27 and 44.

9) List other involved agencies and individuals: A List of Preparers comprises Section VI of this FEIS.

DEPARTMENT OF THE ARMY
ALASKA DISTRICT, CORPS OF ENGINEERS
P.O. BOX 7002
ANCHORAGE, ALASKA 99510

REPLY TO
ATTENTION OF:

NPAEN-PL-EN

RECEIVED
FEB 25 1980
PERMITS BRANCH
EPA - REGION 10

20 FEB 1980

RECEIVED
FEB 25 1980

Mr. Donald P. DuBois
Regional Administrator
U.S. Environmental Protection Agency
Region X
ATTN: M/S 443
1200 Sixth Avenue
Seattle, Washington 98101

RECEIVED
FEB 25 1980
OFFICE OF
REGIONAL ADMINISTRATOR

Dear Mr. DuBois:

The Alaska District, Corps of Engineers has reviewed the Draft Environmental Impact Statement (DEIS) for the Alaska Petrochemical Company's (ALPETCO) proposed refinery and petrochemical facility in Valdez, Alaska. As requested by the Environmental Protection Agency (EPA), the Corps of Engineers has affected the EIS preparation process as a cooperating agency to the extent of defining jurisdiction under Section 404 of the Clean Water Act of 1977 and Section 10 of the Rivers and Harbors Act of 1899. Similarly, as requested by EPA, wetlands and other waters of the United States directly affected by the proposed action were delineated according to the Alaska District. The Corps intends to adopt the final EIS to fulfill our obligations under NEPA. Most of our concerns have been addressed in the Draft Environmental Impact Statement as a result of earlier coordination. The following comments represent items that were not included or reflect the very dynamic nature of development plans in the Port of Valdez area and our increasing concern for wetland conservation in the region. Addressing these comments will insure that the final EIS adequately describes the impacts on elements which are subjects of concern to Corps' regulatory authorities.

▼ C1

a. To fulfill the requirements of the Section 404(b)(1) guidelines additional information must be provided in the existing conditions discussion of wetlands (page 149). This additional information should include a general discussion of the various wetland types affected by the proposed project and a discussion of the function and relative value of the various types. The discussion of

C1 wetlands in the environmental consequences portion of the DEIS (page 236) should present the acreages of each wetland type which will be directly impacted by the proposed action.

b. The proposed action will provide a most important stimulus for economic growth and development in the Port of Valdez area. Although this indirect effect is beneficial, it also constitutes an action which will likely result in future wetland losses. Likewise, the direct and most probable indirect effects of the proposed action will act in a cumulative sense with past wetland alterations. This arena of effect assessment is, of course, problematic because of the level of the state of the art for such analysis. Nevertheless, the indirect and cumulative effects of the proposed action are important in this case and must be addressed in the final EIS. There is a significant need for timely environmental planning at the local level to avoid unacceptable impacts on aquatic systems and wetlands in the area and to reduce the number of unauthorized fills which would otherwise occur. In this light, the following specific examples (these are not the only occurrences) of the need to expand discussions of effects are provided.

C2 (1) In the environmental consequences section, the number of acres of undeveloped land necessary for development as an indirect effect of the proposed action should be stated with a discussion of the likelihood of wetland modifications and the efforts of planning authorities to deal with the issue.

C3 (2) Page 223, paragraph 4: The statement that "Marine organisms may suffer temporary adverse effects during small spill incidents" does not provide enough information. The rationale for stating that effects will be temporary should be given as should the nature of the effects and their significance.

C4 (3) Page 223, paragraph 5: The cumulative impacts of this and other actions in the Valdez area on the movement patterns of marine fish, birds and mammals should be discussed. These actions considered individually may cause only "minor disruptions;" however, all actions proposed for the area when considered cumulatively may cause significant adverse impacts to marine organisms.

C5 (4) Page 225, paragraphs 1, 2, 3, and 4: The average reviewer has little knowledge of the relationship of these organisms to commercially important species. Therefore, the impacts of a product's spill on these organisms and the significance of these impacts should be described. Organism mortality should be quantified if possible.

C6 c. The alternative relating to the expansion of existing Alaskan refineries should be discussed even though it may be beyond the capability of the applicant and outside the jurisdiction of the Corps of Engineers.

C7 C8 d. Under Corps of Engineers regulations an environmentally preferred alternative must be identified. In this regard, the currently proposed project with one modification is so identified. That modification would be to construct the road and pipeline according to Alternative Route Number 2, as indicated on Figure 3.3-1, in a manner which would constitute the least effect on wetlands. In addition, it is recommended that mitigation measures 10 and 25 (as discussed in the Mitigation Measure Summary-Section 7 of the EIS) be included as EPA permitting stipulations. Initiation of these measures will provide further protection to the valuable fisheries resource.

C9 e. According to 40 CFR 1502.11 (a) the Corps of Engineers should be identified as a cooperating agency on the cover sheet of the EIS. The summary description on page viii should identify the Corps as being a cooperating agency and it should note that the Corps is exerting jurisdiction under Sections 10 and 404. The Corps actions should be identified as being issuance of Section 10 and 404 permits or issuance of permits with stipulations. Denial of a permit application is considered "no action" on the part of the Corps. The discussion of the Corps' regulatory program on page 3 should note that the Corps intends to adopt the EIS to fulfill its NEPA obligations if its concerns are satisfied in the final document.

C10 f. The names of Corps of Engineers personnel who participated in preparation of the EIS should be included in the list of preparers. This information is attached.

I appreciate the opportunity to comment on this DEIS and hope that these comments will be of value in preparation of the final document. If I can be of further assistance, please do not hesitate to contact me directly. If further details are desired by your staff, contact can be made with Mr. Ben Kutscheid or Mr. Phil Brna at (907) 752-2572.

Sincerely,

Lee R. Nunn

1 Incl
As stated

LEE R. NUNN
Colonel, Corps of Engineers
District Engineer

RESPONSE TO COMMENTS
BY THE U. S. DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

C1 To fulfill the requirements of Section 404 (b)(1) guidelines, additional information must be provided in the existing conditions discussion of wetlands (DEIS, page 149). This additional information should include a general discussion of the various wetland types affected by the proposed project and a discussion of the function and relative value of the various types. The discussion of wetlands in the environmental consequences of the DEIS (page 236) should present the acreages of each wetland type which will be directly impacted by the proposed action.

R1 The referenced discussions have been expanded to reflect your comments. Please see FEIS Section II, p. 27 and 44.

C2 In the environmental consequences section (DEIS Section 6.0), the number of acres of undeveloped land necessary for development as an indirect effect of the proposed action should be stated with a discussion of the likelihood of wetland modifications and the efforts of planning authorities to deal with the issue.

R2 EIS, Subsection 6.10.6, Subpart Production of Housing (DEIS p. 249), predicts that a need would exist for 708 additional living units beginning in 1984 to meet demand created by the proposed project. It is difficult to predict with any accuracy what portion of this demand would be satisfied by single family units and what portion by mobile homes and multiple family units. As a worst case scenario, assume all 708 units were single family homes, at an average lot size of 9,000 sq. ft. This would be 146 acres of development required to meet the demand. For the sake of discussion, through the use of high density and multiple unit dwellings, assume that only two-thirds of this acreage would be required to fulfill the demand. Based on this scenario, secondary residential development would consume 97 acres in the Valdez area. It is not possible to state with any accuracy what secondary commercial or industrial development may be generated as a

result of the proposed project. Any future industrial activity occuring in Valdez likely would be established somewhere within the boundaries of the industrial use zone currently being defined in the general airport/Alpetco site vicinity by the City of Valdez. There are approximately 4,500 total acres being committed by the city for this use. There do not appear to be any large scale wetland conflicts within any of the known proposed Valdez residential or industrial development zones. Any future development proposed in a wetland area would be the subject of a future Corps of Engineers Section 404 action.

C3 DEIS, p. 223, paragraph 4: the statement that "marine organisms may suffer temporary adverse effects during small spill incidents" does not provide enough information. The rationale for stating that effects will be temporary should be given, as should be the nature of the effects and their significance.

R3 The referenced paragraph has been expanded in response to your comments. Please see FEIS Section II, p. 43.

C4 DEIS, page 223, paragraph 5: the cumulative impacts of this and other actions in the Valdez area on the movement patterns of marine fish, birds and mammals should be discussed. These actions considered individually may cause only "minor disruptions"; however, all actions proposed for the area when considered cumulatively may cause significantly adverse impacts to marine organisms.

R4 Prediction of cumulative impacts cannot be dealt with quantitativly. It is possible that noise and activity at the Alpetco facility combined with future actions in the area could disrupt habitat and movement patterns of fish, birds and mammals. However, a future action almost certainly would be subject to the provisions of the National Environmental Policy Act, and it is expected that potential adverse impacts would be identified and avoided or mitigated if such a threat became imminent.

C5 DEIS, page 225, paragraphs 1, 2, 3 and 4; the average reviewer has little knowledge of the relationship of these organisms to commercially important

species; therefore, the impacts of a product spill on these organisms and the significance of these impacts should be described. Organism mortality should be quantified if possible.

R5 The ecological inter-relationships between various organisms in Port Valdez are discussed throughout the EIS and its technical appendices. Although CEQ regulations require making a worst-case analysis of impacts, there is not adequate research and information available to do this.

C6 The alternative relating to the expansion of existing Alaskan refineries should be discussed even though it may be beyond the capability of the applicant and outside the jurisdiction of the Corps of Engineers.

R6 Terms of the Royalty Crude Oil Contract between Alpetco and the State of Alaska require the state to provide and Alpetco to purchase a minimum 85 percent of the state's royalty crude oil with a conditional option on an additional 5 percent, and require construction of a refinery and petrochemical facility in Alaska. These conditions make the crude unavailable to other refiners. However, even if the crude were available, the possibility of a significant expansion seems remote. Expansion of the North Pole refinery to 150,000 bpd or construction of a 150,000 bpd Tanana Valley refining facility would be prohibitive due to the difficulties of marketing and transportation. Product quantities would be excessive for the local Interior Alaska market, and the costs of transporting products to ice free ports in Cook Inlet or Prince William Sound would be too great to make such an undertaking economically viable. It is more conceivable that the Tesoro or Chevron refinery at Nikiski on Cook Inlet could be expanded to satisfy the objectives of the Alpetco project. However, modifications would be necessary for the facilities to produce petrochemicals and process the heavy, sour Alaska North Slope crude; and some West Coast refiners have indicated that the cost of those modifications result in higher refining costs than would have resulted from the continued and increased purchases of more expensive foreign sweet crude. Since expansion of an existing facility seems neither likely nor economical, further discussion of the possibility would not be relevant considering the parameters of the proposed project.

C7 Regarding the comment that the secondary road and pipeline route be modified according to Alternative Route #2, as indicated on DEIS figure 3.3-1.

R7 Please see FEIS, Section II, p. 13-16.

C8 It is recommended that mitigation measures 10 and 25 (as discussed in the mitigation measure summary - Section 7.1 of the EIS) be included as EPA permitting stipulations.

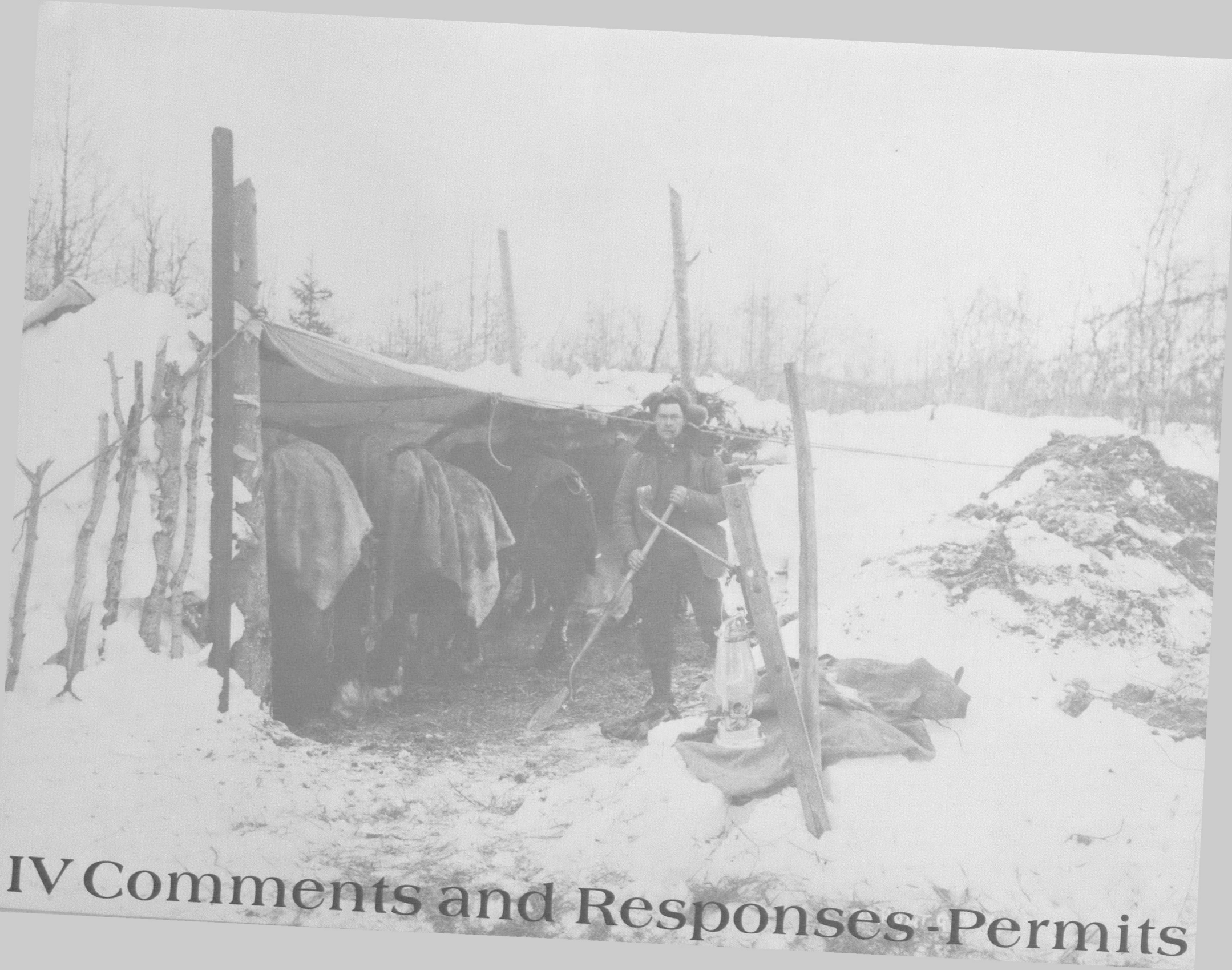
R8 Both mitigation measures have been changed from a not-yet-committed to a committed status and a list of mitigation measures has been attached to the NPDES permit. Please see FEIS Section II, p. 45-49.

C9 Corps of Engineers comment e.

R9 Please see FEIS cover sheet and p. 2.

C10 Corps of Engineers comment f.

R10 See FEIS Section VI.



IV Comments and Responses-Permits

SECTION IV

This section responds to comments received concerning the major federal permits which apply to this project. All letters are reprinted in their entirety. Letters which do not require a specific response are marked with a box and the words, "comment noted." Where further explanation or references are necessary, the comment letter is followed by responses to the specific issues which were raised in that letter.

The format of the responses is to briefly restate the nature of the comment; respond to it; restate the next comment from that letter; respond to it, and so forth. The designations "C" and "R" in the margin represent "Comment" and "Response" respectively and are followed by sequential numbers, so that R1 is the response to C1 and so on.

Comments on the draft NPDES (water discharge) permit are presented first, followed by an explanation of changes which have been made to the permit. The final permit follows, printed in its entirety. The PSD (air quality) permit is considered next. An introduction and comment letter are followed by EPA's PSD Preliminary Determination, Technical Analysis, and Final Determination. This section concludes with comments and responses regarding Sections 10 and 404 permits.

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NPDES

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

JAY S. HAMMOND, GOVERNOR

333 RASPBERRY ROAD
ANCHORAGE 99502

RECEIVED
DEC 18 1979
PERMITS BRANCH
EPA - REGION 10

December 12, 1979

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Gentlemen:

Re: Public Notice No. AK-002763-4/Alaska Petrochemical Company

The Alaska Department of Fish and Game has reviewed the subject NPDES permit application.

We believe the proposed effluent standards are sufficient to protect marine life in Port Valdez Arm and have no objection to permit issuance.

Thank you for consulting us.

Sincerely,

Ronald O. Skoog, Commissioner

BY: Bruce M. Barrett
Projects Review Coordinator
Habitat Protection Section

COMMENT NOTED

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO:

25 JAN 1980

Mr. Michael M. Johnston, Chief
New Source Permit Section (M/S 521)
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Johnston:

Our office has reviewed the National Pollutant Discharge Elimination System (NPDES) permit application No. AK-002763-4 made by the Alaska Petrochemical Company (ALPETCO) for a new source permit and the accompanying proposed NPDES permit as provided in the draft Environmental Impact Statement. Because the permit is for a new pollutant source in which the exact identity and concentration of substances in the effluent is not defined; because the area involved (Port Valdez) is an important estuarine system for many species of fish and wildlife including many migratory birds and marine mammals; and because the area is already subject to pollutant discharges from at least two sources (City of Valdez and Alyeska's Ballast Waste Water Treatment Plant) we recommend the following:

▼ C1 ▲ 1) granting the NPDES permit for a period until the facility is in operation, at which time the permit would be subject to review in order to examine the final effluent to modify the existing permit if deemed necessary;

▼ C2 2) establishing allowable concentrations of substances in the water column by conducting flow-through bioassays using water from the receiving body. Concentration limits should be set for 1/100 the 96-hour TL_m value for nickel, aluminum, cadmium, zinc, and chromium. Factors for ammonia and sulfide should be 1/20 the 96-hour

R7-1

TL_m value and for cyanide 1/10 the 96-hour TL_m value. Recommended species for testing include pink salmon (juvenile) and blue mussels (larval) collected near the discharge site, whereby test results for the most sensitive species would be used in the final determinations.

C2

Pink salmon are the most abundant anadromous fish species in Port Valdez and blue mussels are a major prey item of sea ducks utilizing the area.

▲

Again, because ALPETCO will be beginning a new operation without known or specified pollutant concentrations in the discharge it is difficult to assess potential impacts to fish and wildlife resources or recommend specific stipulations. We can, however, comment on the wastewater treatment plant discharge limitations as specified on page 3 of the draft NPDES permit.

▼ The ammonia limitations as given in the draft permit allow substantially more ammonia to be discharged than ALPETCO expects (ALPETCO estimates 7.0 mg/l as a daily average ammonia effluent concentration whereas the permit allows roughly 38 mg/l as an average and nearly 83 mg/l as a daily maximum for ammonia). The estimated concentration of 7.0 mg/l of ammonia would probably cause no significant harm to fish or wildlife, but should it be at or nearly at the daily limitations presently specified in the draft permit we would have cause for concern.

When ammonia is dissolved in water it reaches an equilibrium of this nature: $NH_3 + H_2O \rightleftharpoons NH_3 \cdot H_2O \rightleftharpoons NH_4^+ + OH^-$ whereby NH_3 is un-ionized ammonia, NH_4^+ is ionized ammonia, and OH^- is hydroxide ions (U.S. Environmental Protection Agency 1976). NH_3 is the most toxic to fish although NH_4^+ has also been acclaimed as toxic to some degree to aquatic organisms (Tabata 1962). The U.S. Environmental Protection Agency (1976) has set .02 mg/l un-ionized ammonia as criteria for the protection of freshwater aquatic life. Toxicity of ammonia has been demonstrated to increase with increased salinity for fingerling coho salmon (Katz and Pierro 1967) therefore suggesting standard accepted ammonia concentrations for freshwater may be too high for sufficient protection in the marine environment. Burrows (1964) found progressive gill hyperplasia in fingerling chinook salmon during a six week exposure to 0.3 mg/l of total ammonia (expressed as NH_4; .002 mg/l was NH_3).

C3

Essentially, even if the dilution factor of 75:1 is achieved along the boundaries of the mixing zone (as specified in the last paragraph, page 7 of the draft permit) the ammonia concentrations if at or near the

C3 ▲ discharge level limit presently proposed would exceed accepted safe levels. We therefore suggest a modification of the allowable discharge limit for ammonia to be determined by bioassay as recommended in number 2 of this letter.

▼ Although chromium is not identified in ALPETCO's fact sheet as a potential component of the discharge it is listed as an effluent characteristic in the draft NPDES permit with a discharge limitation of 17.3 pounds and 29.5 pounds of total chromium and 1.1 pounds and 2.4 pounds of hexavalent chromium given as daily averages and daily maximums respectively. Here again, if the actual discharge were to approach these limitations we would be concerned. Not only has chromium been reported toxic to a

C4 ▲ variety of marine flora and fauna, it has also been reported to be bioaccumulative. Lowman, et al. (1971) reported marine chromium concentration factors of 1,600 in benthic algae, 2,300 in phytoplankton, 1,900 in zooplankton, 440 in molluscan soft parts, and 70 in fish muscle. It is recommended that chromium concentrations not be allowed to exceed 0.1 mg/l even within the mixing zone (18 AAC 70.032 provides that mixing zones be disallowed where the substance discharged is bioaccumulative in food chains - Alaska Department of Environmental Conservation, 1979).

▼ Cyanide concentrations have been limited to 0.38 mg/l as a daily maximum by the draft permit whereas ALPETCO has estimated that 0.5 mg/l of cyanide

C5 ▲ will be a daily average. We again strongly urge that bioassays be conducted to determine maximum allowable cyanide concentrations, but if necessary in lieu of that we would support the permit stipulation as written on page 8, "cyanide in the water column shall not exceed 5 ug/l."

The waters of Port Valdez are not only aesthetically pleasing, but also support an abundance of wildlife which is subject to a variety of both consumptive and nonconsumptive uses. At a time when development in the Valdez area is rapidly expanding, it is important to carefully examine all of the resources present, the potential impacts facing those resources, and the options that are viable to any proposed alterations.

We appreciate your critical review of our recommendations and the opportunity to review this draft NPDES permit.

Sincerely,

Raymond V Canning

Acting [illegible] Area Director

cc:Robert Bowker, USFWS, Anchorage
Tom Trent, ADF&G, Anchorage
Ron Morris, NMFS, Anchorage
Bill Lamoreaux, EPA, Anchorage

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Alaska Department of Environmental Conservation. 1979. Water Quality Standards. Alaska Water Pollution Control Program. 34 pp.

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U.S. Environmental Protection Agency. 1976. Quality Criteria for Water. Washington, D.C. 256 pp.

RESPONSE TO COMMENTS
BY U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

C1 Grant the NPDES permit only until startup in order to reexamine the final effluent and modify the existing permit if deemed necessary.

R1 The permit will expire five years from its effective date of May 25, 1980, which would be approximately one year after plant startup. The data collected from the actual discharge during this one year period of operation will be critical for evaluation before the next permit can be prepared. Although the permit remains at a full allowable five years, the intent of the FWS comment should be satisfied.

C2 Allowable concentrations in the water column be established by flow-through bioassays.

R2 In order to take advantage of the proposed approach, the levels would need to be determined by actually using treated effluent water from the refinery complex. No such data could be generated for several years. Also, currently there is no uniformly acceptable methodology established to conduct such tests; however, EPA is currently considering this issue. The National Marine Fisheries Service, Auke Bay Laboratory, may soon be contracted by EPA to address the issue of toxicity and methodology. EPA and ADEC have, however, examined the probable discharge levels for the more significant parameters and compared these discharge levels (including a dilution factor) to those reported in the literature and have determined that permit limits will keep discharges to sufficiently low levels to protect the marine environment. A complete reevaluation of this issue will be made before a second permit is issued and special attention will be made to EPA's priority pollutants list. EPA has modified the permit to include a new condition (E.3.) allowing for a permit modification to require bioassay monitoring, should appropriate methodology be developed at a later date.

C3 Concern was expressed regarding the ammonia discharge limitations.

R3 EPA and ADEC have reevaluated the available literature on ammonia and the draft permit limit for ammonia and have made several changes. First, the original limit was based on national guidelines and, therefore, was a treatment technology limit - not a water quality limited condition. This original effluent limit now has been replaced by an un-ionized ammonia limit of 2.3 mg/l daily maximum with the additional stipulation that the permittee can obtain a relaxation to that limit up to 7.0 mg/l upon the showing that the mixing zone boundary condition of 0.03 mg/l for NH_3 will be maintained continually. Also, the mixing zone boundary condition of 0.03 mg/l has been added as a separate condition for the purposes of protecting the receiving water. This is roughly the criterion the American Fisheries Society recommends for protecting salmonid fish.

C4 If chromium limits cannot be established by bioassay, an effluent concentration at or below 0.1 mg/l for hexavalent chromium is recommended.

R4 The permit limit hexavalent chromium of 1.1 pounds per day average and 2.4 pounds per day maximum has been reviewed with relation to flow levels with the conclusion that these levels are sufficient to meeting an effluent limit of 0.1 mg/l in the discharge. Under average conditions and with a flow of 2.5 mgd, the concentration would be 0.05 mg/l.

C5 If allowable cyanide concentrations cannot be determined by bioassay, we support the permit stipulation as written on page 8, "cyanide in the water column shall not exceed 5 ug/1."

R5 NPDES permit item A.h.(4) stipulates that "cyanide in the water column shall not exceed 5 ug/1." Please see R2 above and permit Part E.3 regarding bioassays.

Following are the final two pages of the DEIS letter of comment received from the U.S. Department of Commerce, National Marine Fisheries Service. The entire letter appears in Section III, p. 102. Comments beginning with C30 concern the draft NPDES permit, so are reprinted here for reference. Responses to these comments follow.

4. Wastewater Discharge

1. Impacts of Wastewater Discharge

C23 Page 200. We believe this section should discuss the existing Alyeska effluent discharge, addressing how it differs from the proposed ALPETCO discharge, and the potential for additional environmental impact caused by the combined discharge and possible synergistic effects (since the Alyeska effluent moves counter-clockwise in Port Valdez toward the vicinity of the ALPETCO diffuser discharge point.)

C24 Page 204, paragraph 2. Oil and grease method is not an adequate method for measuring total hydrocarbons. Effluent should be characterized by Gas Chromotography, including heavy metals, total aromatic hydrocarbons, total monoaromatics, total polyaromatics, and individual compounds benzene, toluene, xylene, napthalene, etc.

C25 Page 204, paragraph 5. Accumulation of hydrocarbon, Ni (Nickel), and other heavy metals in sediments around the diffuser is likely to occur, providing the potential for accumulation in the food web.

C26 Page 207, paragraph 1. Flatfish do not actively avoid petroleum hydrocarbons.

8. Ecosystems

1. Marine

C27 Page 220, paragraph 5. There is an error in the sentence which ends at top of p. 221. Salmon do not spawn April to mid-May in Solomon Gulch Creek. Perhaps the statement was intended to refer to fry migration from the stream.

C28 Page 225, paragraph 5. Reproductive stages of macro-algae are sensitive to low-levels of hydrocarbons.

7. Mitigation Measures

2. Monitoring Programs

General. This section on monitoring should be specifically cross referenced to Attachment B, Draft NPDES, pp. B-36-B-57 (especially p. B-55 describing intertidal monitoring).

C29 A requirement for ALPETCO to provide funds for monitoring would be desirable, since NMFS is no longer being funded by the U.S. Fish and Wildlife Service to continue the intertidal monitoring. Perhaps future costs could be shared by ALPETCO and Alyeska; this is implicit in the NPDES.

C30 Attachment B; p. B-55, 56, 57. The provision for monitoring biological populations and water quality is excellent. We suggest that an additional point be added to 2, a. (2). Biological Studies of Individual species line 5, as follows: ...and (c) mortality, including quantitative estimates of the abundance and distribution populations of Macoma and associated organisms, and comparisons with previous estimates gathered over the past 10 years at the NOAA/NMFS Dayville monitoring site."

We suggest this addition for the following reasons: Recognition of sublethal effects of effluent based only on changes in health is only correlative evidence, dependent on coincidence of health changes with increases in toxic substances in the tissues of organisms. Correlation does not necessarily prove that the toxic substances are responsible for a change in health. A hypothetical example of this problem would be a decline in growth rate of Macoma and an increase in toxic substances in the tissues, when the decline in growth was the result of reduction of the food supply available to the organisms, i.e., toxic substances reduced the bacterial or plankton populations the clam utilizes for food without directly affecting the clam.

C30 It is therefore important to monitor the abundance and distribution of the population (not only the health of individuals). For example, the clams may surface due to the presence of a toxic substance and disappear as a result of predation. The only useful evidence in such a case would be data which show a decrease in abundance coinciding with an increase of refinery-derived substances in the environment.

Annual and seasonal population estimates at the NOAA/NMFS site from 1970-79 show a remarkably stable population of large Macoma at the higher tidal elevations. With this backlog of data, any later change in the abundance or distribution of the clam population would be measurable, and studies to determine the cause could be implemented. (See Attachment B; p, B-55 in Section 2, a. (2) under mortality.)

C31 Sufficient leeway should be incorporated in the permit to initiate additional studies on particular aspects of the biology of the mudflat community to evaluate changes in population abundance or health of individuals within reasonable limits in terms of time and cost.

C32 Page B-56. Reference - Stekoll, Clement and Shaw.

C33 Page B-56. Add: "Macoma shall be . . . from the Old Valdez dock to an intertidal location near the diffuser."

C34 Page B-57. (2). We suggest specifying Mytilus edulis or Limanda aspera (yellowfin sole) as additional species. NMFS has previous data from Port Valdez on hydrocarbon levels in these species.

C35 Page B-57. Footnote 2, paragraph 1. (Lees, et al.) is missing.

CLEARANCE: SIGNATURE AND DATE:

F/HP:JWRote

RESPONSE TO COMMENTS BY U. S. DEPARTMENT OF COMMERCE
NATIONAL MARINE FISHERIES SERVICE

C30 Concerning adding quantitative estimates of the abundance and distribution of populations of Macoma and associated organismas to the biological studies conditions.

R30 Abundance and zonation studies in the muddy intertidal regions are required in permit Part E.1.a.(1), which specifies that these studies shall be conducted at a minimum of three stations along three separate sampling transects, including the Dayville Flats area. Quantitative estimates of Macoma abundance and distribution will be documented in this study. NMFS information will be integral to the determination of any chronic effects of low levels of wastewater constituents on water quality and biota. The data collected shall be submitted in semi-annual reports throughout the life of the permit, and shall be synthesized and discussed in a final summary report to be submitted November 25, 1984 (see NPDES permit Part E.2. in Section IV, p. 177). The final data report shall include intrepretations of major findings, and the principal investigator's recommendations for future studies, should any be necessary.

C31 Sufficient leeway should be incorporated into the permit to initiate additional studies of the biology of the mudflat community to evaluate changes in population abundance or health.

R31 No such open-ended condition would be acceptable in a permit. EPA does have procedures by which to propose a modification to the permit if justifiable reason comes to light (see permit Part C.2.). However, it is expected that the final data summary report required in permit Part E.2. would identify any information indicating need for such studies, as well as recommend the studies.

C32 Regarding the reference to Stekoll, Clement and Shaw on p. B-56.

R32 The typographical error in Stekoll's name has been corrected in the final permit.

C33 Regarding the insertion of two words into the first sentence of the first full paragraph on p. B-56.

R33 The suggested insertion would change the intent of the sentence. The sentence, which has been modified in the final permit, refers to an intertidal location nearest the diffuser, in the area of the old Valdez dock.

C34 On p. B-57, (2) We suggest specifying Mytilus edulis or Limanda aspera as additional species.

R34 It is likely that one of the two suggested species will be the third species identified for hydrocarbon analysis, if found in suitable abundance. While the suggestion that a filter-feeder such as Mytilus be used in the study is appreciated, it seems appropriate to leave final selection of the third species until after relative abundance has been documented by the applicant's monitoring consultant. This initial reconnaissance may show that Mytilus is an appropriate species for intensive monitoring. Mytilus is the subject of extensive monitoring in Port Valdez as a part of the Alyeska Pipeline Service Company NPDES permit.

C35 Page B-57, footnote 2, paragraph 1, is missing.

R35 The reference is to Lees, et al, "Intertidal and Shallow Subtidal Habitats of Port Valdez," prepared by Dames and Moore for The Alpetco Company in September 1979.

INTRODUCTION TO NPDES PERMIT

The draft NPDES permit, which appears in Attachment B, has been modified slightly as a result of comments received by the agency. Limitations have been established for un-ionized ammonia (see p. 3 and 4 of the final permit). An explanation of the rationale for these changes appears in Section IV, p. 150-151, items C3 and R3. In addition, the State of Alaska Department of Environmental Conservation has made several changes to the monitoring program. A listing of these changes and their rationale is presented below, with references keyed to the page numbers of the final permit. A copy of the final permit follows this explanation.

Changes to E.2 - Receiving Water Monitoring - As Requested by ADEC

Page 19

Condition (1) Abundance and Zonation Studies: A sentence was added to provide the consultant the flexibility of choosing specific sites within the general areas listed.

Condition (2) Biological Studies of Intertidal Species: Axinopsida serricata was substituted for Mya areneria because it is a common subtidal bivalve, more abundant and widespread than M. areneria. Also, Axinopsida will allow examination of a subtidal dweller for comparison with Macoma balthica, a common intertidal species.

The Airport Creek transect is added to the section on the study of individual species so that parameters are examined at three locations consistent with those listed in the abundance and zonation study section.

A. serricata is added to the condition index study to provide a measure of the physiological response of both a common subtidal bivalve (Axinopsida) and a common intertidal bivalve (Macoma) to waste discharges. This is considered important in order to evaluate effects under both stratified and nonstratified plume conditions.

Page 20

Axinopsida sampling location is specified here to make the paragraph consistent with the previous paragraph.

Condition b Subtital Benthos Monitoring Program: The new wording adds a single station at a location very near the diffuser at the approximate trap depth as estimated in diffuser studies. It is considered important to evaluate the extent of community response very near the diffuser at depths where the effluent plume is likely to "layer out" under stratified hydrographic conditions because it is at these locations that effects, if any, are likely to be found. Such an approach may also provide valuable information on the threshold responses of specific species to wastes and allow for identification of the most sensitive indicator species that would be useful in monitoring at more distant locations. Also importantly, gradients in the response of the benthos as a function of distance from the discharge point will be better defined by the proposed station selection.

Page 21

Condition c Hydrocarbon Analysis: Indicated changes were made in (1) to provide for a measure of gradients in buildup of hydrocarbons in sediments as a function of distance from the diffuser outfall. This change has also been made in the Alyeska Pipeline Service Company discharge permit which requires similar types of studies.

The compounds phenanthrene, fluorene and anthracene have been highlighted in historic and recently published accounts as accumulating in sediments and have a long residence time around chronic petroleum inputs, and, as such they serve as an excellent indicator of buildup through time.

The species A. serricata was substituted for Echicerus echicerus because it is more abundant in the subtidal area and the change here makes the section consistent with earlier sections on monitoring of individual species, one of which is A. serricata.

Condition (d) Substitutions of Axinopsida for Echicerus for reasons above. Addition of Nephtys to include a polychaete species of differing feeding behavior than Macoma or Axinopsida to evaluate whether any metal accumulations differ as a function of feeding type, i.e. trophic level.

Permit No.: AK-002763-4
Application No.: AK-002763-4

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. §1251 et seq; the "Act"),

Alaska Petrochemical Company, an Alaskan Corporation (hereinafter called "Alpetco")

is authorized to discharge from a facility located near Valdez, Alaska,

to receiving waters named Port Valdez,

in accordance with effluent limitations, monitoring requirements and other conditions set forth hereof.

This permit shall become effective on May 25, 1980.

This permit and the authorization to discharge shall expire at midnight May 25, 1985.

Signed this 25th day of April, 1980.

Director, Enforcement Division

A. EFFLUENT LIMITATIONS, WATER QUALITY CONDITIONS, AND MONITORING REQUIREMENTS

1. During the period beginning at plant start-up and lasting through the expiration date, the permittee is authorized to discharge treated process water, treated ballast water, treated storm water, and untreated clean storm water from the treatment plant through the outfall diffuser system.

a. Such discharges shall be limited and monitored by the permittee as specified below:

1. WASTEWATER TREATMENT PLANT DISCHARGE LIMITATIONS

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATION	
	Daily Average[1/]	Daily Maximum[1/]
Biochemical Oxygen Demand (5-day) (BOD_5) kg(lb)/day	467 (1041) + Ballast Water Allocation[2/] + Storm Water Allocation[3/]	878 (1956) + Ballast Water Allocation + Storm Water Allocation
Total Suspended Solids (TSS) kg(lb)/day	383 (838) + Ballast Water Allocation + Storm Water Allocation	600 (1321) + Ballast Water Allocation + Storm Water Allocation
Chemical Oxygen Demand (COD) kg(lb)/day	2780 (6096) + Ballast Water Allocation + Storm Water Allocation	5360 (11,940) + Ballast Water Allocation + Storm Water Allocation
Oil & Grease kg(lb)/day	141 (330) + Ballast Water Allocation + Storm Water Allocation	266 (610) + Ballast Water Allocation + Storm Water Allocation

1/ The Daily Average and Daily Maximum discharge limitations for BOD_5, TSS, COD, and Oil and Grease shall be the summation of the specified numerical limitation plus the Ballast Water and Storm Water Allocations.

2/ Ballast Water Allocations are defined in Part A.1.a.3.

3/ Storm Water Allocations are defined in Part A.1.a.4.

1. WASTEWATER TREATMENT PLANT DISCHARGE LIMITATIONS (Continued)

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATION	
	Daily Average	Daily Maximum
Phenolic Compounds kg(lb)/day	3.1 (6.9)	6.37 (14.2)
Un-Ionized Ammonia mg/l	N.A.	2.3[1/]
Sulfide Kg (lb)/day	2.5 (5.6)	5.64 (12.7)
Total Chromium kg (lb)/day	7.7 (17.3)	12.9 (29.5)
Hexavalent Chromium kg (lb)/day	0.48 (1.1)	1.01 (2.4)
Aromatic Hydrocarbons (BTX) mg/l	N.A.	1.00
Cyanide mg/l	N.A.	0.38

1/ Permittee may obtain a relaxation of this value, up to a maximum of 7.0 mg/l, upon the showing to EPA and ADEC that the mixing zone boundary condition for NH_3 of 0.030 mg/l will be continuously maintained.

2. WASTEWATER TREATMENT PLANT DISCHARGE MONITORING REQUIREMENTS

EFFLUENT CHARACTERISTIC	MONITORING REQUIREMENTS	
	Measurement Frequency	Sample Type
Flow	Continuous	Recording
BOD_5	Daily	24 hour composite
TSS	Daily	24 hour composite
COD	Daily	24 hour composite
Oil and Grease	Daily	24 hour composite
Phenolic Compounds	Daily	24 hour composite
Ammonia as NH_3 (un-ionized)	Daily	24 hour composite
Sulfide	Daily	24 hour composite
Total Chromium	Daily	24 hour composite
Hexavalent Chromium	Daily	24 hour composite
Cyanide	Daily	24 hour composite
Density	Daily	Not Applicable
Temperature	Daily	Not Applicable
Nickel	2/weekly	24 hour composite
Aromatic Hydrocarbons (BTX)	2/weekly	Grab
Aromatic Hydrocarbons (by GS-MS)	Monthly	Grab
Selenium, Cadmium, Copper, Zinc, Lead	Monthly	24 hour composite
Methylene Chloride	Quarterly	Grab
Trichloroethylene	Quarterly	Grab
Phenanthrene/Anthracene	Quarterly	Grab
1, 1, 2, 2-tetrachloroethane	Quarterly	Grab
parachlorometa cresol	Quarterly	Grab
1, 2-trans-dichloroethylene	Quarterly	Grab
dichlorobromomethane	Quarterly	Grab
N-nitrosodi-n-propylamine	Quarterly	Grab
bis (2-ethylhexyl) phthalate	Quarterly	Grab
Diethyl phthalate	Quarterly	Grab
tetrachloroethylene	Quarterly	Grab

3. TREATED BALLAST WATER ALLOCATION

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATION		MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow	11,345 m^3/Day (2,995,000 gpd)	14,800 m^3/Day (3,900,000 gpd)	Continuous	Recording
BOD_5	0.026 kg/m^3 (0.21 lb/1000 gal)	0.048 kg/m^3 (0.40 lb/1000 gal)	N/A	
TSS	0.021 kg/m^3 (0.17 lb/1000 gal)	0.033 kg/m^3 (0.27 lb/1000 gal)	N/A	
COD	0.24 kg/m^3 (2.0 lb/1000 gal)	0.47 kg/m^3 (3.9 lb/1000 gal)	N/A	
Oil and Grease	0.008 kg/m^3 (0.067 lb/1000 gal)	0.010 kg/m^3 (0.084 lb/1000 gal)	N/A	

The total daily Ballast Water Allocation in kg/Day or lb/Day for BOD_5, TSS, COD, and Oil and Grease shall be determined by multiplying the appropriate daily average and daily maximum values by the actual daily flow.

4. TREATED STORM WATER ALLOCATION

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATION		MONITORING REQUIREMENTS	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow	6,000 m^3/Day (1,584,000 gpd)	14,800 m^3/Day (3,900,000 gpd)	Continuous	Recording
BOD_5	0.026 kg/m^3 (0.21 lb/1000 gal)	0.048 kg/m^3 (0.40 lb/1000 gal)	N/A	
TSS	0.021 kg/m^3 (0.17 lb/1000 gal)	0.033 kg/m^3 (0.27 lb/1000 gal)	N/A	
COD	0.19 kg/m^3 (1.6 lb/1000 gal)	0.37 kg/m^3 (3.1 lb/1000 gal)	N/A	
Oil and Grease	0.008 kg/m^3 (0.067 lb/1000 gal)	0.015 kg/m^3 (0.126 lb/1000 gal)	N/A	

The total daily treated Storm Water Allocation in kg/Day or lb/Day for BOD_5, TSS, COD, and Oil and Grease shall be determined by multiplying the appropriate daily average and daily maximum values by the actual daily flow.

b. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be recorded and monitored continuously.

c. There shall be no discharge of floating solids or visible foam in other than trace amounts or oily wastes which produce a sheen on the surface of the receiving water.

d. Samples taken in compliance with the monitoring requirements specified above shall be taken prior to the addition of untreated "clean storm water" and prior to entering the outfall system.

e. "Clean storm water" shall have a total organic carbon (TOC) level less than 35 mg/l and an Oil and Grease level less than 15 mg/l prior to entering the final holding pond and firewater pond. Any segragated "clean storm water" exceeding these limits shall receive complete treatment (air flotation, biological oxidation, and sand filtration).

f. An outfall diffuser system shall be utilized to provide for the dispersal of the treated wastewaters to Port Valdez. A mixing zone is provided in Port Valdez for the purpose of receiving the discharge from the diffuser system. The boundaries of the mixing zone are:

(1) The top of the mixing zone shall be at all times five (5) meters below the receiving water surface.

(2) The bottom of the mixing zone shall be at all times one half (0.5) meters above the bottom of Port Valdez.

(3) The sides of the mixing zone shall not be more than 150 meters from the diffuser centerline.

(4) The ends of the mixing zone shall not be more than 150 meters from each end of the diffuser system.

g. The outfall diffuser shall be designed and located to continually achieve a minimum dilution of 75 to 1 at all points along the boundary of the mixing zone. A report containing all data relative to the determination of dilutions (including worst case) and the design and location of the diffuser system (including impacts from seismic activities) shall be submitted six (6) months prior to diffuser construction start-up to the Director, Enforcement Division and the Alaska Department of Environmental Conservation (ADEC). Before diffuser construction start up may begin the diffuser system design and location must receive joint approval by the Director, Enforcement Division and ADEC.

If it is determined that worst case conditions cannot continually achieve a 75 to 1 dilution, the permittee may request from EPA and ADEC a reduction in the dilution rate upon the showing that the boundary conditions as specified in Part A.1.h. are continually maintained.

h. At all boundaries of the mixing zone, conditions of the Alaska Water Quality Standards (18AAC 70.020) for marine waters shall be maintained. In particular the following shall be achieved:

(1) The pH shall not be less than 6.5 standard units or greater than 8.5 standard units, and shall not vary more than 0.1 pH unit from natural conditions.

(2) No measurable increase in sediment concentrations above natural conditions.

(3) Total aromatic hydrocarbons in the water column shall not exceed 10 ug/l (micrograms per liter), or 0.01 of the lowest measured continuous flow 96 hour LC_{50} for life stages of species identified by the Alaska Department of Environmental Conservation as the most sensitive, biologically important species in a particular location, whichever concentration is less. There shall be no concentration of hydrocarbons, animal fats, or vegetable oils in the sediment which cause deleterious effects to aquatic life. Surface waters and adjoining shorelines shall be virtually free from floating oil, film, sheen or discoloration.

(4) Cyanide in the water column shall not exceed 5 ug/l.

(5) Un-Ionized ammonia (NH_3) in the water column shall not exceed 0.030 mg/l.

B. MONITORING AND REPORTING REQUIREMENTS

1. Representative Sampling

Samples and measurements taken as required shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results shall be summarized each month on a Discharge Monitoring Report form (DMR; EPA No. 3320-1). These reports shall be submitted monthly and are to be postmarked by the 14th day of the following month. Reporting shall begin at the

commencement of discharge. Duplicate signed copies of these, and all other reports herein, shall be submitted to the Director, Enforcement Division, the Alaska Operations Office and ADEC at the following addresses:

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

Attn: Water Compliance Section M/S 513

United States Environmental Protection Agency
Alaska Operations Office
701 'C' Street - Box 19
Anchorage, Alaska 99513

State of Alaska
Department of Environmental Conservation
Region II
MacKay Building - Room 1206
Denali Street
Anchorage, Alaska 99501

3. Additional Monitoring by Permittee

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified below, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report form (EPA No. 3320-1). Such increased frequency shall also be indicated.

4. Definitions

a. The "daily average concentration" shall be the arithmetic average (weighed proportionally by flow volume) of all the daily maximum concentrations made during a calendar month.

b. The "daily maximum concentration" shall be the concentration for a sample determined for any calendar day when taken as required in A.1.a.

c. A "composite sample" is a sample weighted proportionally by flow volume. Either the volume of each individual sample comprising the composite will be directly proportional to discharge flow rate or the sampling interval (for constant-volume samples) will be inversely proportional to the flow rates over the time period used to produce the composite.

d. The "daily average flow" is the total discharge volume occurring during a calendar month divided by the number of days within the calendar month for which a discharge occurred.

e. The "daily maximum flow" is the total volume of discharge for any calendar day.

f. BOD_5 means five (5) day biochemical oxygen demand.

g. MGD means millions of gallons per day.

h. mg/l means milligrams per liter.

i. m^3/day means cubic meters per day.

j. gpd means gallons per day.

k. kg/m^3 means kilograms per cubic meter.

l. lb/1000 gal means pounds per 1000 gallons.

m. kg means kilograms.

n. lbs means pounds.

o. "Bypass" means the intentional diversion of wastes from any portion of a treatment facility.

p. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which would cause them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

q. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventive maintenance, or careless or improper operation.

5. Test Procedures

Test procedures for the analysis of pollutants shall conform to 40 C.F.R. Part 136, which contains a list of approved methods.

Procedures for Aromatic Hydrocarbons (BTX) under Part A.1.a. will be indentical or equivalent to those used by the EPA contractor Rockwell International titled "Aromatics in Oily Wastewaters: Determination of Benzene, Toluene, and Xylenes", during 1978 and 1979. Test of permittee's effluent will measure Benzene, Toluene, Xylene, and ethylbenzene content of the effluent.

Test procedures for Aromatic Hydrocarbon (GC-MS) under Part A.1.a. will be identical to or equivalent to those used by the Environmental Protection Agency titled "Sampling and Analysis Procedures for Screening of Industrial Effluents for Priority Pollutants" dated March 1977 and revised April 1977. Parameters to be reported include Benzene, Toluene, o-Xylene, m-Xylene, p-Xylene, 1,2,3-Trimethylbenzene, 1,2,4-Tri-methylbenzene, 1,3,5-Trimethylbenzene, Napthalene, 2,6-dimethylnaphtha- lene, 1-Methylnapthalene, 2-Methylnapthalene, Pyrene, Benzo-a-pyrene, Chrysene, Fluoranthene, Acenaphthene, Fluorene, 2,4-dimethylphenol, 1,2-dichloroethane, ethylbenzene, 4-nitrophenol, benzo-a-anthracene, anthracene, benzo-ghi-perylene and phenanthrene. Trimethylbenzene and dimethylnaphthalene concentrations can be reported as the sum of all isomers for each of these groups (i.e. total trimethylbenzenes and total dimethylnaphthalenes). Xylene isomers are to be reported individually, except that meta and para isomers may be reported together.

Alternative techniques, jointly approved by the Director, Enforcement Division, EPA, the Alaska Department of Environmental Conservation (ADEC) may be substituted for the Aromatic Hydrocarbons methods given above. Also after joint agreement between EPA, ADEC, and the permittee, one or more of the Aromatic Hydrocarbon analyses or surrogate methods under Part A.1.a. may be eliminated from monitoring requirements.

6. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The exact place, date, and time of sampling;

b. The dates the analysis were performed;

c. The person(s) who performed the analyses;

d. The analytical techniques or methods used; and

e. The results of all required analysis.

7. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Director, Enforcement Division or ADEC.

8. Noncompliance Reporting

a. Noncompliance notification will be made when any of the following situations occur:

(1) Bypassing of any treatment facilities (Part C.5., below).

(2) Facility upset (Part C.6., below).

(3) Failure of facility (Part C.7., below).

(4) Other instances not covered by above.

b. Noncompliance notification shall consist of at least the following:

(1) A description of the discharge and cause of noncompliance;

(2) the period of noncompliance to include exact dates and times and/or the anticipated time when the discharge will again be in compliance; and

(3) steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

c. Timing of report shall be consistent with the following:

(1) Permittee shall report telephonically within 24-hours from the time of becoming aware of any violation of a daily maximum. A written submission shall be provided within five (5) days of becoming aware of the noncompliance.

(2) Permittee shall provide a written report of any violations of the monthly average. This report shall conform to a. and b. above and be submitted concurrently with the Discharge Monitoring Report as a separate report.

C. GENERAL REQUIREMENTS

1. Reopener Clause

This permit shall be modified, or alternatively, revoked and reissued, to comply with any applicable standard or limitation promulgated or approved under Section 301(b)(2)(c) and (d), 303(c), 304(b)(2) and 307(a)(2) of the Act if the standard or limitation so issued or approved:

(1) Contains additional or more stringent permit conditions which are not technology based (e.g. conditions based on water quality standards, or effluent standards or prohibitions under Section 307(a)); or

(2) Contains additional permit conditions controlling pollutants listed as toxic under Section 307(a) of the Act or as hazardous substances under Section 311 of the act and which are not contolled by new source performance standards.

2. Modification

The permit may be modified, terminated, or revoked during its term for cause as described in 40 C.F.R 122.31.

Any permittee who knows or has reason to believe that any activity has occurred or will occur which would constitute cause for modification or revocation and reissuance under 40 C.F.R. 122.31 must report its plans, or such information to the Director, Enforcement Division.

3. Right of Entry

The permittee shall allow the head of the Alaska Department of Environmental Conservation, Director, Enforcement Division and/or their authorized representative, upon the presentation of credentials and such other documents as may be required by law,

a. to enter upon the permittee's premises where a point source is located or where any records must be kept under the terms and conditions of the permit;

b. to have access to and copy at reasonable times any records that must be kept under the terms and conditions of the permit;

c. to inspect at reasonable times any monitoring equipment or method required in the permit;

d. to inspect at reasonable times any collection, treatment, pollution management, or discharge facilities required under the permit; and

e. to sample at reasonable times any pollutants in the ballast or process wastewater treatment streams.

4. Operation and Maintenance

The permittee shall at all times maintain in good working order and operate as efficiently as possible all facilities and systems (and related appurtenances) for collection and treatment which are installed or used by the permittee for water pollution control and abatement to achieve compliance with the terms and conditions of the permit. Proper operation and maintenance includes but is not limited to effective performance based on designed facility removals, adequate funding, effective management, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures.

5. Bypass

a. Bypass is prohibited unless all of the following four (4) conditions are met:

(1) Bypass is unavoidable to prevent loss of life, personal injury or severe property damage;

(2) there are no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment down-time;

(3) permittee makes notification in accordance with Part B.8.b. and c.; and

(4) where the permittee knows in advance of the need for a bypass, prior notification shall be submitted for approval to the Director, Enforcement Division if possible at least 10 days in advance. The bypass may be allowed under conditions determined to be necessary by the Director, Enforcement Division to minimize any adverse effects. The public shall be notified and given an opportunity to comment on bypass incidents of significant duration, to the extent feasible.

b. Prohibition of Bypass

The Director, Enforcement Division may prohibit bypass in consideration of the adverse effect of the proposed bypass or where the proposed bypass does not meet the conditions set forth in Part C.5.a., above.

6. Upsets

a. Effect of an Upset

An upset shall constitute an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph b. below are met.

b. Conditions Necessary for a Demonstration of Upset

The permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the specific cause(s) of the upset;

(2) the permitted facility was at the time being operated in a prudent and workman-like manner and in compliance with proper operation and maintenance procedures;

(3) the permittee submitted information required in Part B.8.b. and c.

c. Burden of Proof

In any enforcement proceeding the permittee seeking to establish the occurrence of an upset shall have the burden of proof.

7. Failure of the Facility

The permittee, in order to maintain compliance with its permit, shall control production and all discharges upon reduction, loss, or failure of the treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

The permittee shall report such instances in accordance with Part B.8.b. and c. above.

8. Adverse Impact

The permittee shall take all reasonable steps to minimize any adverse impact to waters of the United States resulting from noncompliance with the permit.

9. Removed Substances

Collected screenings, grit, sludges, and other solids removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent entry of those wastes or runoff from such materials into navigable waters unless otherwise authorized in this permit.

10. Transferability of Permits

This permit may be transferred to another person by the permittee if:

a. The permittee notifies the Director, Enforcement Division of the proposed transfer;

b. a written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittees (including acknowledgement that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on) is submitted to the Director; and

c. the Director, Enforcement Division within 30 days does not notify the current permittee and the new permittee of his or her intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

D. RESPONSIBILITIES

1. Availability of Reports

Except for data determined to be confidential under section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of ADEC and the Director, Enforcement Division. As required by the Act, effluent data shall not be considered confidential. Knowingly making a false statement on any such report may result in the imposition of criminal penalties as provided for in section 309 of the Act.

2. Civil and Criminal Liability

Except as provided in permit conditions on "Bypass" (Part C.5.) and "Upset" (Part C.6.) and "Failure of Facility" (Part C. 7.), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

3. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the Act.

4. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.

5. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

6. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

E. OTHER REQUIREMENTS

1. Outfall Study

Permittee shall develop and implement a study which will measure the actual diffusion and dispersion characteristics achieved by the outfall diffuser system. The study shall extend for a one year period with dispersion studies occurring at sufficiently close intervals to evaluate the effects of the varied climate and seasonal conditions, complete tidal cycles, and extremes in plume stratification. The plan shall as a minimum describe the following:

a. Frequency and duration of testing;

b. Method of measuring dispersion and mixing;

c. Extent of testing in the vicinity around the outfall system, and

d. Type of dye, tracer material, or other material or parameter to be used.

e. Hydrographic characterization at the sampling points.

The study plan shall be submitted to the Alaska Department of Environmental Conservation, the Alaska Operations Office of EPA, and the Director, Enforcement Division, EPA three (3) months prior to commencement of facility operation. The outfall study shall commence no later than three (3) months after start-up of the refinery facility. Summary reports shall be submitted quarterly, with a final report submitted no later than sixty (60) days following completion of the study. Each report shall include all relevant data including actual receiving water and effluent characteristics (affecting dispersion and mixing) as well as times, locations, and duration of test.

2. Receiving Water Monitoring

The permittee shall implement the following receiving water and biological monitoring program for the waters of eastern Port Valdez. The emphasis of the program is on monitoring for subtle changes in water quality and sediment, sublethal responses of resident biota to waste water discharges, and to sample intensively at selected representative stations to provide an improved statistical basis for analysis of the data. The following program encompasses studies that are considered necessary to objectively evaluate existing conditions and any chronic effects of low levels of refinery/petrochemical effluent process water and ballast water discharges on water quality and biota.

This program shall be implemented no later than two (2) months following the effective date of this permit and will be reviewed semi-annually.

The permittee shall submit semi-annual and yearly progress reports on the studies to the Alaska Department of Environmental Conservation, Pouch O, Juneau, Alaska, the Environmental Protection Agency, Anchorage Office and Director Enforcement Division. Semi-annual and annual reports shall be made available to other agencies upon request. The first semi-annual report shall be due on October 1, 1980, and semi-annually thereafter through May 25, 1985. A final summary report, including all data and conclusions contained by that time, shall be submitted on November 25, 1984. This report shall include a synthesis of data and a discussion and interpretation of major findings and also principal investigator recommendations for future studies should any such studies be necessary.

The receiving water and biological monitoring program are to include at least the following elements:

a. Intertidal Monitoring Program

(1) Abundance and Zonation Studies

Three (3) muddy, sandy intertidal transects are to be maintained over the life of the permit. Sites: North Lowe River (Dayville Flats), Old Valdez dock area and the Airport Creek area. Specific sites within these areas shall be selected by the permittee's contractor. Sampling intervals along the transects are to be permanently marked. Three sampling periods: April or May, June or July, and September of each year. Vertical intertidal coverage shall be consistent with the range established by Myren and Pella for studying the various Macoma complexes. A minimum of three (3) sampling stations per transect shall be required.

Stratified random sampling methods and data analysis as described by Myren and Pella (1977) shall be generally followed. Temperature, salinity and suspended sediment shall be monitored concurrent with each sampling period.

(2) Biological Studies of Individual Species

Macoma balthica (intertidal) and Axinopsida serricata (subtidal) shall be individually monitored for purposes of detailing important biological events, including, but not limited to: a) seasonal and annual growth, b) reproductive biology (histological examination of reproductive staging schemes, i.e. gametogenesis, fecundity, spawning period), and c) mortality. Mya arenaria may be selected as an alternate species should population densities be sufficient for monitoring purposes. Sampling data reduction and reporting methodologies shall be consistent with those specified in sections 8.6 and 8.7 of the 1979 Final Report to Alyeska, Continuing Environmental Studies of Port Valdez, Alaska, and those of Lees et al. Sites: Old Valdez dock transect, North Lowe River (Dayville Flats) and Airport Creek transect. Three sampling periods: April or May, June or July and September of each year.

In addition to the study of selected biological events of individual species as decribed above, the permittee shall provide a measure of the overall biological condition of Macoma balthica and Axinopsida serricata using methodologies consistent with published accounts on this index of health. These accounts generally specify the following ratios for calculating the index, either of which are acceptable in reporting results:

$\frac{\text{Tissue dry weight (g)}}{\text{(shell length in mm)}} \times 100$ (Reference: Stekoll, Clement and Shaw. 1978. Sublethal effects of chronic oil exposure on the interidal clam Macoma balthica. University of Alaska. IMS)

or

$\frac{\text{ash-free dry weight (g)}}{\text{(cm shell length)}^3} \times 1000$ (Reference: Anderson, J. W. 1978. Condition index and free amino acid level of Protothaca staminea exposed to oil contaminanted sediment. Battelle Northwest Laboratories, Sequim, Washington.)

Macoma and Axinopsida shall be collected (in stratified groups over their vertical ranges) from the Old Valdez dock area intertidal location nearest the diffuser. Establishment of suitable control site(s) away from these areas to assess gradients in condition index is a critical requirement of this study. Sampling frequency at all sites shall be at least semi-annually in conjunction with the elements in a.(1). and a.(2). above. Temperature, salinity and suspended load shall each be monitored coincident with sampling.

b. Subtidal Benthos Monitoring Program

The deep subtidal benthos program shall consist of annual grab sampling at each of the following stations: Stations 1, 2, 4, 5 and 8 of Feder's Valdez grid and a single station located along the northern side of the mixing zone at the approximate plume trap depth (i.e. between 40 to 60 meters depth). September is suggested for the sampling period. Eight replicate grabs per station shall be taken with a $0.1m^2$ Van Veen sampler. Analyses shall be performed on the data consistent with methods outlined in Section 9.4.3 of the Final Report, Continuing Environmental Studies of Port Valdez, Alaska 1979, including statistical differences in station mean wet weight biomass.

Temperature and salinity of the bottom water, suspended sediment load and percent organic composition of sediments shall be monitored concurrently with this program.

A shallow subtidal shelf sampling program (to approximately 6 meters below MLLW or the depth of shelf break) shall

consist of at least semiannual transecting at adjacent extensions of the three (3) intertidal sites in a. above, emphasizing the following indicator species: Nephtys punctata, Axinopsida serricata and Polydora quadrilobata. Sampling design shall follow methods established by Lees et al[2]. Temperature, salinity and suspended solids shall be determined concurrent with each sampling period.

c. Hydrocarbon Analysis

(1) Sediment concentrations of aromatic, non-biogenic petroleum hydrocarbons shall be monitored annually at intertidal and subtidal stations identified in both a. and b. above; and from a minimum of four (4) total sites located outside but within 0.05 kilometer of both the north and south sides of the mixing zone. A fifth sample shall be taken from the bottom near the diffuser and inside the sides of the defined mixing zone. At least two (2) of the above five (5) samples shall be collected at the approximate trap depth. Naphthalene, phenanthrene, fluorene, anthracene and total alkylnapthalene concentrations should be individually highlighted in the analysis of the suite of petrogenic hydrocarbons.

(2). Hydrocarbon levels shall be monitored at least annually in the soft tissues of Macoma balthica, Axinopsida serricata and a single additional species to be selected. Sample sites: each of the intertidal and shallow subtidal transects discussed above.

d. Trace Metals

(1) Chromium, zinc, cyanide and cadmium levels shall be determined at least annually in sediment samples from all subtidal benthos stations and at sediments around the diffuser outfall at sites identified in c.(1) above.

(2) Chromium, zinc, cyanide and cadmium concentrations are to be determined in bottom water samples collected at stations listed in c.(1) above concurrent with the taking of sediment samples.

(3) Chromuim, zinc, cyanide and cadmium concentrations in Macoma balthica, Nephtys and Axinopsida serricata soft tissues are to be determined for individuals sampled at each of the established intertidal and shallow subtidal transect sites. Sampling interval to be identical to that described for sediments and water.

3. Bioassay Monitoring

If appropriate methodology is developed which is mutually acceptable to EPA and ADEC in which to perform bioassay monitoring to determine acute toxicity levels of toxic pollutants from the expected effluent discharge, EPA may initiate a permit modification for review to establish a bioassay monitoring program to determine these levels.

4. Mitigative Measures

The permittee shall meet the following mitigative measures:

a. Design Criteria

(1) The final structural design of refinery components shall incorporate a ground motion analysis which assesses the dynamic behavior of the coupled site/refinery components.

(2) Culverts, bridges, and other drainage structures on fish streams shall be designed to assure that water velocities will not impede fish passage, and culverts shall be installed in concert with the natural streambed to prevent "perched" conditions which impede fish passage.

(3) Noise abatement components on refinery equipment shall be used.

(4) Implement a sediment and erosion control program for all disturbed soil surfaces to minimize erosion and subsequent siltation into the streams.

(5) The crude supply and product pipelines shall be aligned to minimize the number of stream crossings, and shall be buried to reduce the risk of hydrocarbon spills from accidential pipeline damage and vandalism. However, the crude supply and products pipelines from the plant site to the Richardson Highway shall be elevated to avoid in-water crossing of the Robe Lake System anadromous fish streams.

b. Groundwater Supplies

(1) The point of groundwater withdrawal shall be located near the north edge of the site so that drawdown in the vicinity of the Brownie and Corbin (Robe) Creeks is minimized. The groundwater drawdown shall be monitored during plant operations.

(2) Additional water to Corbin (Robe) and Brownie Creeks shall be provided to maintain winter flow if the water table is lowered.

(3) Pollution of the groundwater source shall be mitigated by the provision of impervious diking and surfacing of areas where hazardous materials are stored.

c. Construction Related Activities

(1) Construction work at the products dock shall be scheduled between June 1 and July 15 to avoid the intertidal spawning period for salmon in Solomon Gulch Creek.

(2) Trenching activities for burial of the effluent pipeline in the intertidal zone shall be scheduled to avoid the pink salmon run in nearby Sewage Lagoon Creek.

(3) Buried pipeline stream crossings shall be installed during the least biologically sensitive time of the year employing the construction method that is least damaging for that type of stream. A stream bypass flume shall be utilized to carry stream flows during pipe burial at Dayville Flats Creek. Construction at most streams in the area shall be conducted between June 1 and July 15. Construction at the Lowe River shall take place between March 1 and June 15.

(4) Construction activities which could affect the streams during no-flow or very low-flow periods shall be scheduled to minimize the problems associated with increases in erosion and turbidity.

(5) Dredging activities for the construction barge dock shall be conducted outside the period of April 7 to June 7 to avoid disturbance of juvenile salmonids present during that time span. Operations shall be conducted with a clamshell to avoid fish entrainment problems, and material shall be deposited inland.

(6) Construction and fill material shall be disposed of only in approved landfill sites.

(7) Any damage to the Richardson Highway and Dayville Road in the vicinity of the Alpetco operations shall be repaired to its preconstruction condititon at the close of construction.

d. Spill Prevention, Control and Countermeasure

(1) The permittee shall develop and implement a spill prevention, control and countermeasure plan, and an oil and hazardous substances spill contingency plan for offshore and onshore operations to reduce the chances of spillage of petroleum hydrocarbons and to maximize the effectiveness of control and cleanup measures in the event of a spill.

(2) Positive-seal liners shall be used in all ponds containing hazardous materials.

(3) The permittee shall containerize any hazardous materials temporarily stored on-site, using sealed 50-gallon drums or similar sealable and transportable containers.

(4) Leak detection systems capable of detecting small volumes and slow rates of leakage, and the proper use of valves in in the pipelines shall be used to minimize potential spills.

e. The permittee shall assist in establishing an interdisciplinary team of engineers, fishery biologists, and hydrologists to provide early review of construction plans and schedules.

f. The permittee shall establish training programs to meet the staffing requirements of the proposed facility during its construction and operations phases.

g. Collect rain runoff and snowmelt along the eastern periphery of the site and direct it to a point on Corbin Creek (Glacier) minimizing the potential for contamination of a portion of the surface runoff.

h. Fences shall be installed around the construction camp and all permanent facilities and garbage disposal areas to help minimize human/bear interaction.

i. The permittee shall leave a buffer zone of undisturbed natural vegetation with minimum radius of 91 m (300 ft) around all bald eagle nest sites to reduce disturbance and prevent "blowdown" of nest trees. Pipeline construction activities shall not be conducted in the vicinity of active bald eagle nest during the nesting period if the nests are active.

j. The permittee shall to the extent possible, locate project facilities away from nesting areas or resting areas for migrating birds.

k. If any historical or archaeological site is discovered, the permittee shall stop construction work at the location and contact the appropriate authorities.

STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, as required by Section 401 of the Clean Water Act, has been requested by the Alaska Petrochemical Company, an Alaskan Corporation, 601 W 5th Avenue, Suite 320, Anchorage, Alaska 99501, for authorization to discharge treated wastewater, treated ballast water, and storm water from an outfall into waters of the State of Alaska.

The proposed activity is located in the subtidal zone, Section 3, T9S, R6W in eastern Port Valdez, approximately 3 miles SE of the City of Valdez.

Public notice of the application for this certification has been made in accordance with 18 AAC 15.180.

Water Quality Certification under Section 401 of the CWA is required for the proposed discharge because the discharge will be permitted by an Environmental Protection Agency, National Pollutant Discharge Elimination System permit, identified as AK-002763-4.

Having reviewed the application, comments received in response to the public notice, and the final conditions of the NPDES permit, the Alaska Department of Environmental Conservation certifies that there is reasonable assurance that the proposed discharge is in compliance with the requirements of Section 401 of the Clean Water Act which includes the Alaska Water Quality Standards, 18 AAC 70, and the Standards of the Alaska Coastal Management Program, 6 AAC 80.

March 28, 1980
Date

C. Deming Cowles
Deputy Commissioner

STATE OF ALASKA

JAY S. HAMMOND, Governor

OFFICE OF THE GOVERNOR

DIVISION OF POLICY DEVELOPMENT AND PLANNING

Phone 465-3512

Pouch AD - Juneau 99811

April 3, 1980

Mr. W. James Sweeney, Director
Environmental Protection Agency
605 West Fourth Avenue
Anchorage, Alaska 99501

Mr. Dan Steinborn
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Subject: Alpetco NPDES EPA Water Quality Permit
State I.D. No. FP060-80040301

Dear Sirs:

The Division of Policy Development and Planning, in accordance with Public Law 92-583 and 94-370 and Alaska Statutes 46.40.010, has completed review of the consistency of the subject proposal with the Alaska Coastal Management Program (ACMP).

As currently planned, we concur that the proposal is consistent with ACMP.

However, if the project is substantially amended during its implementation such that it affects the coastal zone differently than as represented in the proposal we reviewed, we ask that you contact the State Clearinghouse to determine if an ACMP review of the revision is required.

Sincerely,

Frances A. Ulmer
Director

cc: Tom Barnes, Office of Coastal Management
Alpetco
Rikki Fowler, DEC
Commissioner McAnerney, CRA
Commissioner Webber, CED
Commissioner Ward, DOT/PF
Bob Baldwin, DNR
Bruce Barrett, ADF&G
Jim Caruth, COE

01-A3LH

PSD

INTRODUCTION TO PSD CONSIDERATIONS

No comments were received on the PSD Preliminary Determination. One letter of no comment was received from the U.S. Department of the Interior, Fish and Wildlife Service, and it is printed on the following page.

This section also contains EPA's PSD Preliminary Determination, PSD Technical Analysis, PSD Final Determination, the PSD permit and relevant state certifications. Notice of the Final Determination appeared in the Federal Register on 1 April 1980.

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO:

27

Mr. Michael M. Johnston, Chief
New Source Permit Section (M/S 521)
U.S. Environmental Protection Agency
Region X
1200 Sixth Avenue
Seattle, Washington 98101

Dear Mr. Johnston:

We have no official comments concerning the Prevention of Significant Deterioration (PSD) permit application submitted by the Alaska Petrochemical company for a facility at Valdez, Alaska. We have taken an interest however, in the possible impacts initiated by air emissions of sulfur dioxide and nitrogen oxides on the freshwater environment in the Valdez basin. Of particular concern is the potential increased acidification accumulations in the snowpack and discharge with spring snow melt. Our office has prepared a proposal for research of such a potential problem but as of yet it has not been funded. We do hope to see adequate monitoring of the air quality in the Valdez area, by a regulatory agency, to insure protection of the area's fish and wildlife resources as well as to maintain the present healthy and scenic environment. Thank you for the opportunity to comment.

Sincerely,

Acting Robert Bowker
Area Director

cc: Bill Lamoreaux, EPA Anchorage

COMMENT NOTED

RECEIVED
MAR 03 1980
PERMITS BRANCH
EPA REGION 10

R7-1

PRELIMINARY DETERMINATION DOCUMENT
PREVENTION OF SIGNIFICANT AIR QUALITY DETERIORATION

PROPOSED CONSTRUCTION OF ALASKA
PETROCHEMICAL COMPANY'S OIL REFINERY AND
LOADING TERMINAL AT VALDEZ, ALASKA

SCOPE

This document, with the technical analysis, presents EPA's preliminary determination of approvability of the Alaska Petrochemical Company's (ALPETCO) proposal to construct a refinery and loading terminal, pursuant to Title I, Part C of the Federal Clean Air Act "Prevention of Significant Deterioration of Air Quality" (PSD).

GENERAL INFORMATION

The Federal Clean Air Act requires review and approval of the construction or modification of major sources of air pollution to assure that the air quality in areas attaining National Ambient Air Quality Standards (NAAQS) is not deteriorated beyond allowable limits for all pollutants regulated by EPA as a result of increased emissions from such new or modified facilities. Before an application to construct a major stationary source can be approved, it must be demonstrated that the expected emissions of all applicable pollutants above the minimum level established by Section 169 of the Act will not exceed the following:

1. Emission limits achievable by the application of best available control technology (BACT)

2. National Ambient Air Quality Standards (NAAQS).

3. In the case of particulate matter and sulfur dioxide, allowable air quality increments.

FINDINGS

A detailed technical analysis of the proposed refinery and loading terminal has been conducted and it has been determined that the Company proposes to install best available control technology (BACT) in all process units except the fluid catalytic cracker regenerator. In this case EPA has determined that BACT will require additional control to clean the flue gas from that unit and has set the emission limits for that source and the others in the refinery as listed on the attached table.

A detailed discussion of this determination as well as proposed record keeping and compliance testing are contained in the technical analysis document.

Emissions of SO_2, TSP, NO_x, CO, and HC as limited above, are not expected to cause or contribute to a violation of any NAAQS or PSD increment.

RECOMMENDATION

Based upon a review of the application, EPA finds the proposed construction, with additional control as required to meet BACT on the FCC unit, will not cause violations of the NAAQS or PSD increment. Furthermore, the emission limits required above for SO_2, TSP, CO, NO_x, and HC represent the BACT. Therefore, EPA proposes to approve the ALPETCO request to construct an oil refinery and loading terminal at Valdez, Alaska. Comments are requested from interested parties and will be carefully considered when making the final determination.

PRELIMINARY DETERMINATION DOCUMENT

TABLE

Emission Limitations

Source	SO_2 conc/ef[1]	SO_2 kg/hr (lb/hr)	NO_x conc/ef	NO_x kg/hr (lb/hr)	PM conc/ef	PM kg/hr (lb/hr)	PM opacity (%)	CO conc/ef	CO kg/hr (lb/hr)	HC kg/hr (lb/hr)	Equipment or operating specifications	Comments
Refinery Fuel Gas	80mg/dscm (0.035gr/dscf)	H_2S --										The average SO_2 emission factor for the combined refinery gas/flexicoker gas is 24.3 ng/J (56.6 lb/10^9BTU)
Flexicoker Fuel Gas	155mg/dscm total sulfur (0.067gr/dscf)											
Combustion Devices (Total)	--	85 (187)	70ppm at 3% O_2 34.4ng/J (80lb/ 10^9BTU)	90 (198)	--	--	5					Low NO_x burners and oxygen monitorings will be used.
Fluid Catalytic Cracker (FCC)	12ppm	5 (11)			0.75kg/ 1000kg coke burnoff	20 (44)	20	500ppm	96 (212)			Based on a 95% efficient FGD system. Particulate concentration is about 70mg/dscm or 0.03gr/dscf
Sulfur Recovery	0.015% by volume 0% O_2 dry basis	7.1 (15.6)										
Flexicoker Sulfur recovery vent	--	0.8 (1.8)										
Gas Turbines	3.2ng/J (7,431b/ 10^9BTU)	3.2 (7.1)	(0.0075E) +F % by volume at 15% O_2	94 (207)	--	--	5				$\frac{F}{0}$ $N < 0.015$ $0.04(N)$ $0.015 < N < 0.1$ $0.004+0.0067(N-0.1)$ $0.1 < N < 0.25$ 0.005 $N > 0.25$	Based on the use of refinery gas as fuel E=14.4kg/watt.hr $\frac{\text{actual ISO heat rate}}{\text{Fuel Bound Nitrogen=N}}$

1/ conc/ef means a concentration or an emission factor limitation

Source	SO_2 conc/ef	SO_2 kg/hr (lb/hr)	NO_x conc/ef	NO_x kg/hr (lb/hr)	PM conc/ef	PM kg/hr (lb/hr)	PM opacity (%)	CO conc/ef	CO kg/hr (lb/hr)	HC kg/hr (lb/hr)	Equipment or operating specifications
Solid Waste Incinerator	--	1.25 (2.8)			70mg/dscm 0.03gr/dscf	0.04 (.09)	10				
Storage Tanks										58 (128)	Pressure tanks for liquids with TVP 76.6kPa. Internal floating roofs with double seals or equivalent for liquids with 10.3 TVP 76.6 kPa
Product Loading Terminal											A vapor recovery system to collect and incinerate the HC emissions. The design efficiency of the incinerator must exceed 99%.
Process Fugitive											Specifications for valves, pumps, and compressors must include the optimum sealing techniques available from the manufacturers. Process drains must be trapped. Oil/water separators must be covered. A HC monitoring and maintenance plan must be submitted to EPA for approval 1 year prior to projected refinery startup.

Technical Analysis
for Prevention of Significant Deterioration
ALPETCO--Valdez, Alaska

December 31, 1979

I. Introduction

Alaska Petrochemical Company (Alpetco) proposes to construct a new oil refinery near Valdez, Alaska to refine approximately 150,000 bbl/day of North Slope crude oil. The proposed new facilities will include a refinery complex and a product loading terminal. The location of the proposed facilities is shown in Figure 1.

Both the potential and allowable air emissions of sulfur dioxide (SO_2), nitrogen oxides (NO_x), particulate matter (PM), carbon monoxide (CO), and hydrocarbons (HC) from the proposed facility exceed the limits for PSD applicability for refineries (100 tons/year). Therefore, a BACT determination and an air quality analysis are required for all sources which emit the above mentioned pollutants. A summary of the air emissions from the refinery is shown in Table 1.

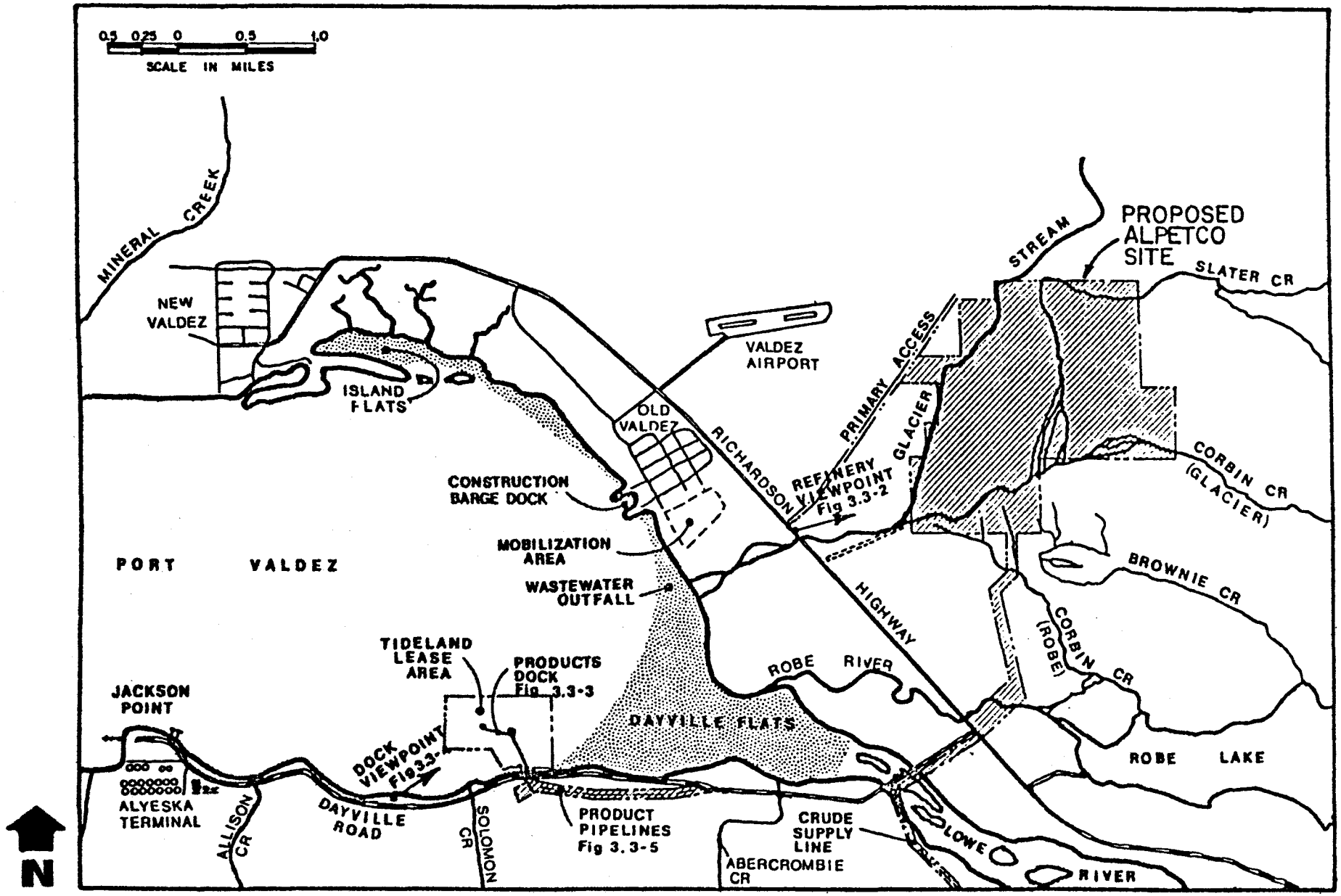
II. Determination of Best Available Control Technology (BACT)

Definition of BACT

One of the criteria for approval of an application under the PSD section of the Clean Air Act is that the control equipment proposed for the source must be representative of the best available control technology (BACT). BACT means an emission limitation based on the maximum reduction of each pollutant achievable through the use of process modifications and emission control systems as determined by the permitting authority. This determination is made on a case-by-case basis, taking into account energy, environmental, and economic impacts. The BACT emission limitation must be at least as stringent as that established under Section 111 or 112 of the Clean Air Act.

BACT for Petroleum Refineries

Several new source performance standards (NSPS) promulgated under Section 111 of the Clean Air Act are applicable to the facilities proposed for this refinery. Included are NSPS for the hydrogen sulfide (H_2S) content of refinery fuel gas (which indirectly



VICINITY MAP **Figure 1**

TABLE 1

Alpetco Refinery

Projected Annual Emissions to the Atmosphere 1/

(Tons per year)

Emission Source	SO_2	NO_x	PM	CO	HC
Process Combustion Devices	842	2,148	108	182	32
Fluid Catalytic Cracker	964	378	245	930	6
Sulfur Recovery Units	107	--	--	--	--
Gas Turbines	31	900	42	71	13
Solid Waste Incinerator	12	4	< 1	<1	--
Storage Tanks	--	--	--	--	560
Product Loading Terminal	< 1	2	--	--	2 2/
Process Fugitive	--	--	--	--	730 3/
Total	1,956	3,432	395	1,183	1,344

1/ Based on the company's proposed control levels at maximum production of 150,000 lb/day.
2/ EPA estimate based on revised control technique--thermal incineration.
3/ EPA estimte based on Radian study.

limits SO_2 emissions from process heaters and boilers), CO and particulate limitations on the fluid catalytic cracking (FCC) regenerator, equipment specifications for hydrocarbon storage tanks, an SO_2 limitation on the tail gas from the sulfur recovery unit, and NO_x and SO_2 limitations on the gas turbines. The specific values of these NSPS are shown in Table 2.

SO_2 Sources

The five sources of SO_2 emissions which must be addressed in the BACT determination are fuel combustion devices, the sulfur recovery unit, the gas turbines, the solid waste incinerator, and the FCC regenerator. The heating requirements within a petroleum refinery are met by first burning the fuel gas generated by the process units. Since there is usually not enough fuel gas generated to meet all the heating demand, the remaining heat is typically supplied by burning oil or purchased natural gas. In this case Alpetco has proposed a processing scheme which will eliminate the need to burn oil during normal operation. This is primarily due to the inclusion of a flexicoker which produces a significant quantity of low BTU gas that can be burned to replace much of the heating requirement typically supplied by burning oil. The remaining heat requirement will be supplied by burning propane. The net effect is that SO_2 emissions will be significantly lower for the proposed Alpetco refinery because of the use of low sulfur refinery gas, flexicoker gas and propane rather than oil. This is an example of a process modification which reduces emissions.

Each of the gas systems (refinery fuel gas and flexicoker gas) will be treated to remove hydrogen sulfide (H_2S) prior to combustion in the process heaters. Alpetco proposes to use amine treating to reduce H_2S in the refinery fuel gas to 50 ppm (about 0.033 gr/dscf) which is about one third the level of the applicable NSPS. A Stretford sulfur removal system is proposed for the flexicoker gas. H_2S will be reduced to 10 ppm, but the total sulfur content will be 100 ppm (about 0.066 gr/dscf) which is about two thirds the level of the applicable NSPS. Because the flexicoker gas has a low BTU content (about 110 BTU/scf), the SO_2 emission factor in units of pounds per billion BTU is considerably greater than for the refinery fuel gas (171 vs 7.43 $lb/10^9 BTU$), but it is still much lower than for low sulfur fuel oil (300 $lb/10^9 BTU$ for 0.3% sulfur oil). Based on the factors discussed above the Alpetco proposal for SO_2 control from process combustion devices is representative of BACT.

The H_2S removed from the various gas streams and from the sour water stripper is sent to a sulfur recovery unit and converted to

TABLE 2

Summary of NSPS for Petroleum Refineries

Facility	Pollutant	Emission Limitation	Remarks
FCC	Particulate	1.0 kg/1000 kg of coke burnoff	
FCC	CO	0.050 percent by volume	
Any Combustion Device	SO_2	230 mg/dscm H_2S in the refinery fuel gas	This is equivalent to 0.1 gr/dscf.
Petroleum Storage Tanks	Hydrocarbons	Equipment specification of floating roof with double seals or vapor recovery system	This NSPS was proposed May 18, 1978 and applies to tanks greater than 151,416 liters storing liquids with a true vapor pressure between 10.3 and 76.6 kPa.
Claus Sulfur Recover Unit	SO_2	0.025 percent by volume at zero percent O_2, dry basis	This NSPS is not applicable to Claus plants smaller than 20 long tons of sulfur per day which are associated with a small refinery.
Gas Turbines	NO_x	75 ppm at 15 percent oxygen and ISO ambient atmosphere conditions	The NSPS allows for an adjustment factor for turbine efficiency and for fuel bound nitrogen.
	SO_2	150 ppm	A sulfur limit in the fuel of 0.8 percent can be used as an alternate sulfur limitation.

elemental sulfur. Alpetco proposes to install two Claus sulfur plants in parallel, each capable of processing 100 percent of the refinery H_2S production. Since Claus sulfur plants typically convert about 94-96% of the sulfur in the feed to elemental sulfur, a significant amount of SO_2 would remain in the tail gas and be emitted if additional treatment was not employed. Alpetco proposes to construct a tail gas treatment unit which will reduce SO_2 to 150 ppm compared to the NSPS emission limitation of 250 ppm. The Alpetco proposal is considered to be representative of BACT.

The gas turbines will be fueled with refinery fuel gas. The applicable NSPS for gas turbines is 150 ppm SO_2 or 0.8% sulfur fuel. As pointed out in the discussion on refinery fuel gas, the SO_2 emissions from burning refinery gas in the gas turbines are about 100 times lower than for 0.8% sulfur oil. Therefore, the Alpetco proposal for SO_2 control from the gas turbines is representative of BACT.

The emissions from solid waste incinerator will be controlled with a scrubber using mild caustic as the scrubbing liquid. This system will remove at least 90 percent of the sulfur which is considered to be representative of BACT.

The SO_2 emissions contained in the exhaust gas from the FCC regenerator result from oxidation of sulfur in the coke which is formed on the FCC catalyst in the reactor portion of the FCC process. SO_2 emissions from the FCC regenerator can be reduced by hydrotreating the feed to the FCC, by treating the regenerator flue gas or by a combination of the two. Since hydrotreating of the FCC feed has certain process benefits such as improved catalyst life, higher gasoline yields, and elimination or reduction of the need for hydrotreating the FCC product streams, FCC feed hydrotreating is now typically selected for use in modern refineries. Alpetco states that they view FCC feed hydrotreating as primarily an air pollution control technique for reduction of SO_2 emissions. Since both ends are achieved through the use of FCC feed hydrotreating, it is difficult to exactly allocate the costs of this unit to the process and to air pollution control. If FCC feed hydrotreating is used to reduce the FCC feed sulfur content by 95% as proposed by Alpetco, the SO_2 concentration in the regenerator flue gas will be about 225 ppm, and the SO_2 emission rate will be about 220 lb/hr. This is the largest single source for which there is any reasonable potential for further SO_2 reduction. Alpetco briefly discusses a few of the possibilities for flue gas desulfurization (FGD); but after pointing out a few problem areas with the Exxon FGD process, the company decided not to propose a FGD system for the FCC.

Several FGD processes are feasible for control of the FCC regenerator flue gas. These include a number of wet systems such as the Exxon process mentioned in Alpetco's application, sodium based scrubbers with or without sodium regeneration, and the newer dry absorber system. The Exxon scrubber system was specifically designed for FCC units to control PM, SO_2, and to a lesser extent condensible HC. It is installed at several Exxon refineries and is achieving about 95% SO_2 removal. The small water purge stream (20 gpm) which Alpetco cited as a potential water discharge problem could be treated to remove the dissolved solids or to eliminate the waste water stream without significant difficulty or cost. Several companies supply double alkali SO_2 scrubbing systems which are capable of removing 90 to 95% of the SO_2 emissions. If sodium regeneration is employed, no waste water is generated and the filter cake is 50-70% solid calcium sulfite/calcium sulfate.

The available dry absorption systems are based on the use of a spray dryer and a particulate collection device such as a baghouse or electrostatic precipitator. Although this is a relatively new application for this technology, the major equipment (spray dryers and baghouses or electrostatic precipitators) have been used in other similar industrial applications for many years. SO_2 removal up to 90 percent is possible with the dry scrubbers; however, the incremental cost rises steeply after 70-75 percent removal. The recent NSPS for coal fired power plants took into account the desirability of the dry scrubber approach and its applicability to SO_2 control when low sulfur coal is burned, by allowing low sulfur coal users to meet a 70 percent SO_2 removal efficiency requirement. The dry scrubber system obviously does not present a water discharge problem or a wet sludge disposal problem and would require fewer safeguards for freeze protection.

An SO_2 control situation similar to this case arose in a recent PSD application for an aluminum smelter modification. A PSD permit was issued to Martin Marietta Aluminum in 1978 which required FGD for two streams which are larger (165,000 and 185,000 acfm) and have a lower SO_2 inlet concentration (about 150 ppm SO_2). Originally the company did not think that SO_2 control was feasible for this source. However, after further engineering analysis a highly efficient and successful SO_2 control system was designed and installed. The Flakt sodium based scrubber system was selected and has exceeded the 70 percent SO_2 removal efficiency requirement by a significant margin and has been operating satisfactorily. Each of the Flakt scrubbing systems cost less than $2 million.

Alpetco raised a few other problems associated with FGD for the FCC including possible acid mist from the wet plume, equipment damage from freezing, and the cost of control. Although these questions should be addressed in the design of any FGD system, they do not appear to be insurmountable. For example, the use of properly designed demisters and reheat of the stack gases would overcome the potential acid mist problem as would the choice of the dry scrubber system. Certain design features such as insulation, steam tracing, enclosed buildings and proper pump and piping design would protect the equipment from freeze damage. The capital cost of $5-6 million presented by Alpetco for FGD appears to be a high estimate. However, even $6 million is less than 0.5 percent of the total capital investment of the refinery, and the estimated annualized cost of $2 million per year is about $0.04 per barrel of refinery throughput. Alpetco did not indicate the economic impact of such costs, but without further information to the contrary it does not appear that these costs have a significant impact on the financial feasibility of the project.

Based on the information contained above, FGD is required to satisfy the BACT requirement. Ninety-five percent SO_2 removal appears technically and economically feasible for the FCC and the emission limitations of 12 ppm SO_2 and 11 lb/hr are based on that removal efficiency.

NO_x Sources

The primary sources of NO_x emissions are the gas turbines, the process heaters, and the FCC regenerator. Only the gas turbines are covered by a NSPS for NO_x at this time. Alpetco proposes to meet the NSPS emission limitation of 75 ppm at 15% oxygen, dry basis. Since the NSPS for gas turbines is relatively recent (promulgated September 10, 1979) and there have not been any significant advances in control technology for gas turbines since that date, BACT for NO_x from gas turbines is determined to be equivalent to the NSPS value of 75 ppm.

NO_x emissions will be minimized from the process heaters by a combination of burning gas rather than oil and using burners especially designed to reduce NO_x (termed low-NO_x burners). The use of low-NO_x burners reduces NO_x emissions at least 30 percent to less than 0.08 lb/10^6BTU which is determined to be BACT for the process heaters.

At the present time there is no available control technology for NO_x from the FCC regenerator. Therefore, the emission limitation representative of BACT is simply the value of the estimated uncontrolled emissions (90 lb/hr).

Particulate Sources

The primary particulate sources are the process heaters, the FCC regenerator, the gas turbines and the solid waste incinerator. The company proposes to burn gas and monitor oxygen in the flue gas of the process heaters to maintain optimum combustion conditions. These measures will minimize particulate emissions to about 10 lb/10^9BTU which is representative of BACT.

Alpetco proposes to control particulate matter (PM) from the FCC with an electrostatic precipitator (ESP) to a level of 1 lb/1000 lb coke burnoff which is the NSPS emission limitation for this source. In order to meet the NSPS, the ESP will remove 90 percent of the PM to a concentration of about 0.04 gr/dscf. Considering PM control alone an ESP or other control device such as a baghouse or venturi scrubber are capable of achieving lower PM concentrations. Depending on the source category, levels of 0.02 or as low as 0.01 gr/dscf have been achieved. Since the company did not present a BACT analysis evaluating alternative control levels for this source, there is no evidence that this source could not achieve better PM control by sample increasing the collection plate area in the ESP.

Since SO_2 must also be controlled for this source, the BACT determination for PM must be considered in combination with SO_2 removal.At this time the specific SO_2 control system has not been selected. Therefore, it is difficult to precisely evaluate the impact of various levels of PM control. For example, if a dry SO_2 scrubber system is used with a baghouse, a PM level of 0.02 gr/dscf would be representative of BACT. However, if a wet scrubber system using a venturi scrubber for PM control is selected, 0.03 gr/dscf is representative of BACT.

In order to allow reasonable flexibility in designing an optimum PM and SO_2 control system for the FCC, a PM emission limitation of 0.75 lb/1000 lb coke burnoff (about 0.03 gr/dscf) is determined to be representative of BACT.

Particulate matter from gas turbines results from ash introduced in the fuel or injection water and from incomplete combustion of the fuel. The only feasible control techniques are to limit the ash content of the fuel and the solids content of the injection water and to operate the turbine in a manner which results in good combustion. Alpetco proposes to burn refinery gas which has essentially no ash and to operate the turbines to achieve efficient combustion. Therefore, BACT for PM is determined to be 9.6 lb/hr maximum for the gas turbines which is based on the company's proposal to burn gas and use efficient operating procedures.

The solid waste incinerator will be controlled by a wet scrubber of 90 + percent efficiency. The resulting PM emissions of 0.03 gr/dscf (0.09 lb/hr) are representative of BACT.

CO Sources

The FCC regenerator, the process heaters, and the gas turbines are the major sources of CO. The company proposes to limit CO emissions from the FCC regenerator to the level of the NSPS (500 ppm) by controlling the operating conditions within the regenerator to oxidize most of the CO to CO_2. The only other available control technique requires the installation of an external CO boiler which is considerably more expensive and not significantly more efficient. Therefore, the Alpetco proposal to meet the NSPS CO emission limitation of 500 ppm is representative of BACT.

CO emissions from the process heaters are minimized by burning gas rather than oil and monitoring the combustion parameters especially oxygen to insure good combustion. Since Alpetco proposes to employ both of these measures to limit CO emissions to 17 lb/10^9BTU, their proposal is representative of BACT.

CO emissions from the gas turbines will be minimized by the same techniques as for the process heaters which are representative of BACT.

HC Sources

Hydrocarbons are emitted from process stacks (primarily the process heaters), storage tanks, the product loading terminal and fugitive sources such as valve stems, pump and compressor seals, drains and oil/water separators. The only feasible measures to minimize hydrocarbons from the process combustion sources is to use fuel gas rather than oil and to maintain good combustion conditions. The Alpetco proposal which will employ both measures is considered to be representative of BACT.

Alpetco proposes to control hydrocarbon emissions from storage tanks by: (1) using pressure vessels for hydrocarbons with a true vapor pressure (TVP) greater than 76.6 kPa. The pressure vessels will be equipped with a pressure relief valve discharging to the flare system; (2) using internal floating roofs with double seals for hydrocarbons with a TVP greater than 10.3 kPa but less than 76.6 kPa. These control techniques are in compliance with the applicable NSPS and are considered to be representative of BACT. Further hydrocarbon control could potentially be achieved by using floating roofs on nine large storage tanks in heavy oil service (TVP<10.3 kPa). Alpetco submitted an analysis of this option which showed the

incremental capital cost to be about $12 million. The hydrocarbon emission reduction associated with this expenditure was less than 20 percent of the total refinery hydrocarbon emissions (after control) and was not considered sufficient to justify the added investment. Therefore, in this case BACT for heavy oil storage tanks is considered to be cone roof tanks.

In their original PSD application Alpetco proposed to employ certain operational procedures such as submerged filling to reduce hydrocarbon losses at the product loading terminal. Upon EPA's request Alpetco re-examined the available control alternatives for this source and now proposes to collect and incinerate the hydrocarbon emissions. Collection and incineration which will eliminate essentially all hydrocarbon emissions (about 200 tons per year) from product loading is considered to be representative of BACT.

Hydrocarbons will be emitted from a multitude of small source within the process units such as valve stem packing, pump and compressor seals, drains, flanges, and oil/water separators. These are termed process fugitive emissions. Alpetco proposes to build into their design certain features to minimize process fugitive emissions and to conduct a monitoring and maintenance program after startup to keep the process fugitive emissions at a minimum. The proposed design features include reducing the number of flanges by welding as many joints as possible; using double mechanical seals, tandem mechanical seals or equivalent on pumps; ordering the optimum sealing arrangment offered by the compressor vendors; trapping all process drains and covering the oil/water separators.

The other part of the process fugitive control plan is a monitoring and maintenance program. Recent research has shown that a few sources with high leak rates make up the bulk of the total process fugitive losses. The objective of the monitoring and maintenance program is to screen all the sources to identify the high leakers and have them repaired. Alpetco proposes to institute such a program although the details are not completely finalized at this time. EPA agrees that the proposed two pronged approach is representative of BACT for process fugitive hydrocarbon sources. Rather than itemize in detail all the requirements of a monitoring and maintenance program, the permit conditions will require the company to submit a detailed plan a year prior to startup for EPA approval. This approach will allow the company to incorporate the latest developments of EPA sponsored research in this subject area.

III Ambient Air Quality Analysis

Based on the potential and allowable emissions discussed in Section II, the proposed refinery project is subject to ambient air quality

review for SO_2, TSP, CO, and NO_2. For each of these pollutants the air quality analysis must demonstrate that the emissions from the source will not cause or contribute to a violation of either a national ambient air quality standard (NAAQS) or a PSD increment.

The proposed refinery is also subject to ambient air quality review for hydrocarbons. This pollutant will be discussed separately in Subsection F.

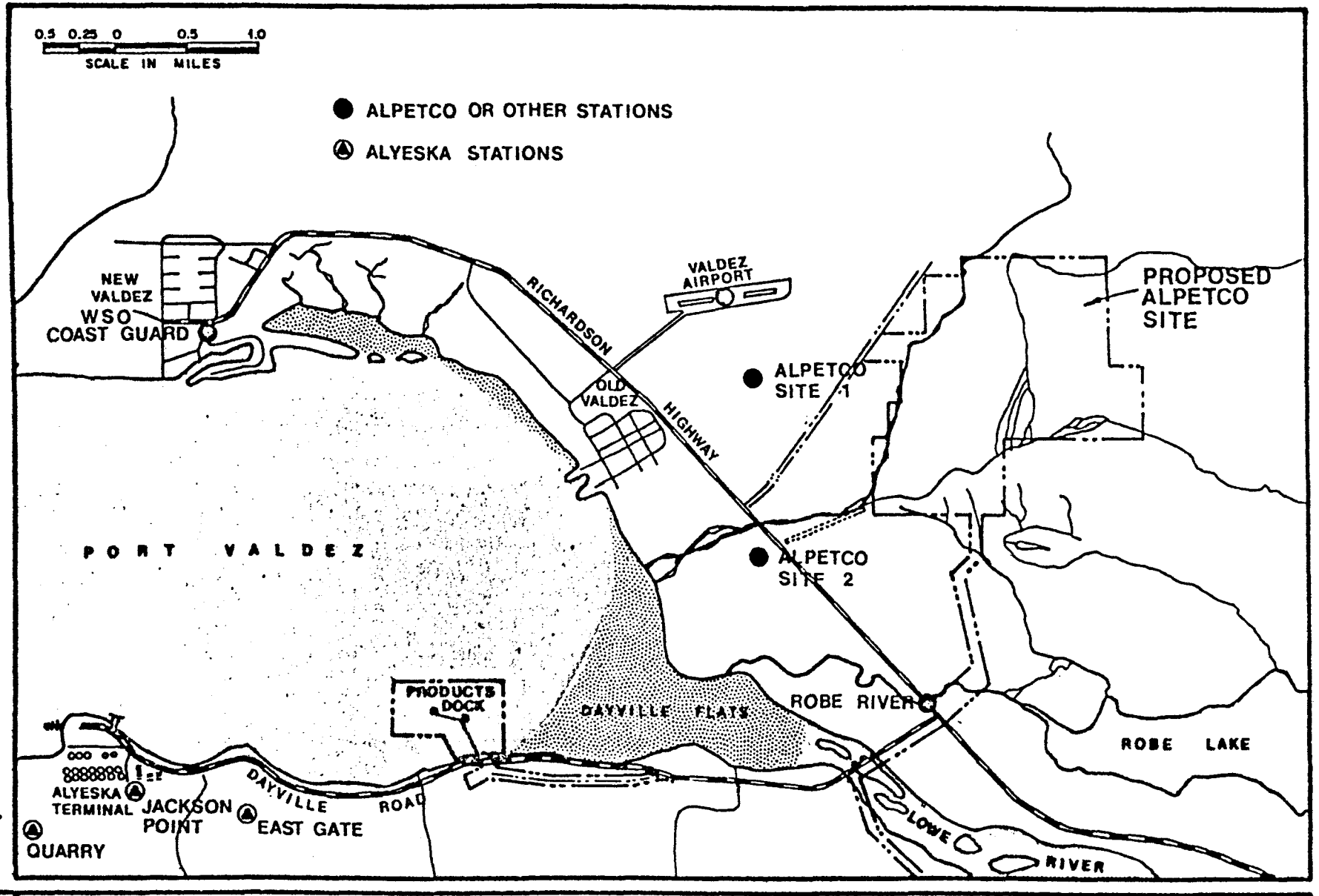
A. Existing Conditions

Topographically the area surrounding Valdez, Alaska is extremely complex. Port Valdez itself is essentially a fjord encompassed on all sides by mountains which rise abruptly to four to five thousand feet above sea level. Interspersed among the mountains are glacial and river valleys which feed into the "bowl-like" Port from all directions. The irregular topography with its resulting mountain-valley wind circulation, plus the added complexity of the land-water interface, make an attempt to model pollutant transport and dispersion in such terrain extremely difficult.

The entire area within the region of air quality impact of the proposed refinery is designated at Class II for purposes of PSD. In addition, all currently existing sources in the Valdez area contribute only to the baseline concentration, i.e., none of the PSD increments have been consumed.

Meteorology and ambient air quality have been monitored in Port Valdez at the locations indicated in Figure 2. Table 3 lists each of the locations along with the pollutants and/or meteorological parameters being monitored, and the approximate period of record which was available for consideration for this PSD review.

A summary of the available air quality data is contained in Table 4. Air quality data from both the Alpetco and Alyeska monitoring networks form the basis of this summary. The highest measured value from both networks for the available period of record is listed for comparison with the appropriate NAAQS. Existing ambient levels of CO and NO_2 are low. The indicated TSP levels are also low, however, it should be noted that the period of record does not include the summer months when higher TSP levels would be expected. Moderate levels of O_3 and SO_2 have been measured rather infrequently in Valdez. Based on all of these data it appears that NAAQS are not threatened by existing sources of air pollution in Valdez.



LOCATION OF METEOROLOGICAL DATA SOURCE USED IN MCRSVAL MODELING ANALYSES.

Figure 2

Table 3

AIR QUALITY/METEOROLOGY MONITORING IN VALDEZ

LOCATION*	PARAMETERS MONITORED	AVAILABLE PERIOD OF RECORD(approx.)
Alpetco Site 1	SO_2, TSP, CO, O_3, NO_2 Wind speed, wind direction, temperature.	12/78 - 6/79
Alpetco Site 2	SO_2, TSP, CO, O_3, NO_2 Wind speed, wind direction, mixing height, temperature.	2/79 - 6/79
National Weather Service (WSO)	Wind speed, wind direction, temperature, cloud cover, ceiling height, (24 observations per day).	7/75 - 6/79
Valdez Airport	Wind speed, wind direction, cloud cover, ceiling height (daytime only, 8 observations per day).	7/78 - 6/79
Coast Guard and Robe River	SO_2, NO_2, O_3, total hydrocarbons.	9/78 - 6/79
East Gate and Quarry	SO_2, wind speed, wind direction.	9/78 - 6/79

*See Figure 2.

Table 4

SUMMARY OF AIR QUALITY DATA

in micrograms per cubic meter

POLLUTANT		HIGHEST MEASURED VALUE	NAAQS*
SO_2	3 hour	265**	1,300
	24 hour	105	365
TSP	24 hour	48	150
CO	1 hour	5,725	40,000
	8 hour	2,290	10,000
O_3	1 hour	145	235
NO_2	arithmetic mean	8	100
Total Hydrocarbons	3 hour	62	160

* National Ambient Air Quality Standard
** Value may have been higher--instrument pegged for 4 hours.

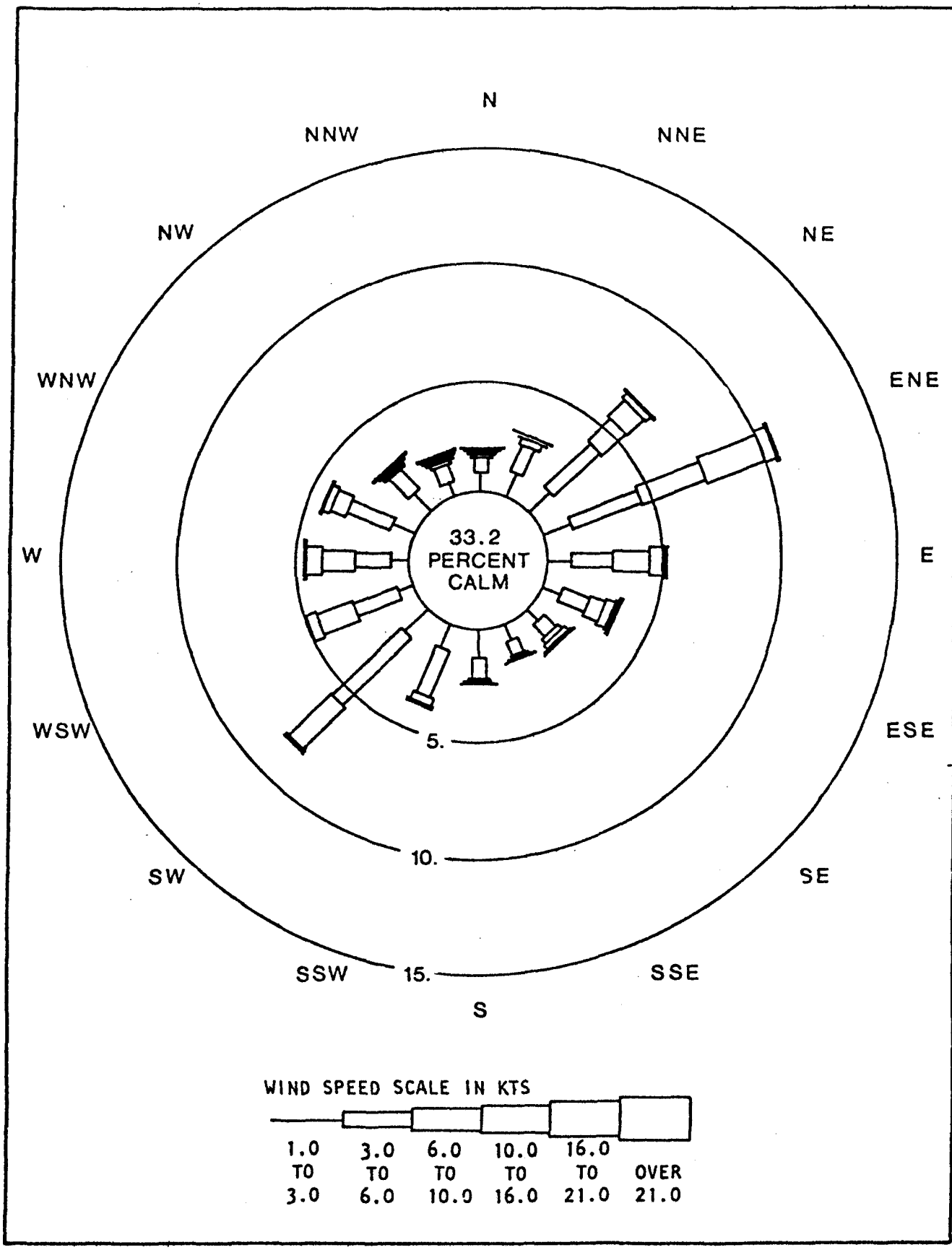
Figure 3 is a graphic display of the joint frequency distribution of wind speed and wind direction (a wind rose) measured by the National Weather Service at the Coast Guard Building in Valdez. This station has the longest period of record in Valdez, although it is a very short period of record relative to other locations in the U.S. Most important to note is the relatively high percentage of reported calm surface winds (33.2%). This is mainly a result of the "bowl-like" topography which minimizes the effects of synoptic scale winds at the surface. Some average mixing heights which were determined from a very limited set of data are listed in Table 5. The mixing height can be thought of as the upper limit of vertical dispersion of air pollutants. Relative to other locations in the U.S. (Holzworth, 1972), the average mixing heights are very low. Due to the high frequency of calm conditions and low average mixing heights, dispersion conditions in Valdez can be characterized as generally poor.

B. Regulatory Framework

To establish the regulatory framework for this very difficult air quality modeling problem, a few important quotes from EPA's "Guidelines on Air Quality Models" (EPA, 1978) are pertinent. (This guideline is incorporated by reference into PSD regulations.)

p. 19 "Gaussian models are considered to be state-of-the-art techniques for estimating concentrations of sulfur dioxide and particulate matter. They are the best choice for most point source evaluations. For all point sources two levels of sophistication in the use of models are suggested. The first level is composed of models which can provide a preliminary estimate of concentrations. If it is estimated by the screening technique that a source may cause a concentration that is an unacceptable portion of an allowable air quality increment, then that source should be subjected to a more refined analysis."

In a paragraph mentioning screening techniques the Guideline says that the "Valley Model is applicable to some complex terrain situations". However, about refined techniques, the Guideline says (p. 20) "No refined, widely available models applicable to complex situations are identified. It is recommended that each complex situation be treated on a case-by-case basis with the assistance of expert advice." And if "...refined models applicable to a complex situation do not exist, then it may be necessary to base estimates of source impact...on only the estimates provided by the screening techniques."



HOURLY AVERAGE SURFACE WINDS PRECENTAGE FREQUENCY OF OCCURANCE VALDEZ WSO WIND ROSE (7/75-12/78) Figure 3

Table 5

VALDEZ SEASONAL MIXING DEPTHS*

(Meters)

Season	Valdez Airport	Lowe River	Shoup Spit	Valdez Narrows	Alyeska Terminal	Alpetco Site 2
Summer	221	--	194	186	166	--
Fall	--	221	--	111	--	--
Winter	--	184	--	105	--	--
Spring	--	--	--	--	--	310

*All values except Alpetco Site 2 determined from limited set of aircraft temperature soundings taken in 1971 and 1972 (Alyeska, 1974). Alpetco Site 2 values determined from limited set of acoustic sounder measurements during 1979.

C. Model Methodology

Faced with the difficult task of modeling air quality in Valdez and in light of regulatory guidance, Alpetco used three models to estimate air quality impacts:

1) The Valley Model (Burt, 1977), an EPA Gaussian screening model.
2) MCRSVAL (for Multi-CRSTER/Valley), a Gaussian hybrid model developed by Dames & Moore, consultants to Alpetco.
3) RADM (for Random-Walk Atmospheric Dispersion Model), a refined numerical model also developed by Dames & Moore.

1. The Valley Model is basically a Gaussian model which was developed by EPA to estimate the air quality impact of stabilized plumes on hillsides in complex terrain. Valley is considered by EPA to be a screening technique, and as such it provides an upper limit estimate of the second highest 24-hour concentration that would occur during a year. Valley is appropriate if the worst-case meteorological conditions for a particular area might be those which would cause an elevated stablized plume to impact terrain. Valley is therefore considered appropriate for application to Valdez to identify potential threats to 24-hour NAAQS. Due to the arbitrary assumptions in the model it is not appropriate to estimate a 3-hour impact. The model does, however, have an option to calculate an annual impact.

2. MCRSVAL was developed by Dames & Moore from two EPA models: CRSTER and Valley. CRSTER is a single source, flat-terrain model whose most important feature is the ability to calculate hourly concentrations from the input of hour-by-hour meteorological conditions for one or more years of data. CRSTER was modified by Dames & Moore to accept spatially separated sources and this became Multi-CRSTER. This model has been previously accepted by EPA Region 10 for a PSD application in flat terrain. Multi-CRSTER was then modified to include the terrain impact algorithm which is in the Valley Model, and the result is MCRSVAL. It is essentially the Valley Model modified to calculate hour-by-hour concentrations.

MCRSVAL treats the input wind speed differently than the Valley Model. Valley simply assumes that the input wind speed applies throughout the mixing layer. MCRSVAL, on the other hand, assumes that the input wind speed applies at 10 meters above the surface and that the wind speed increases with increasing height above the surface as is normally the case in the real atmosphere. For a given set of input meteorological conditions the MCRSVAL estimate would be less than the Valley estimate since concentration is inversely proportional to wind speed in the model calculations.

Even though MCRSVAL is designed to accept the more refined, hour-by-hour meteorological input, it can not be considered a refined model in the sense indicated by EPA's "Guideline on Air Quality Models". To take the arbitrary assumptions in the Valley model and assume they apply on an hour-by-hour basis to the actual physical conditions in Valdez as MCRSVAL does, is stretching the application of the model well beyond where it was intended and where there is a technical basis to do so. MCRSVAL is therefore not considered appropriate for calculating a 3-hour estimate. However, it can be considered a screening technique for the 24-hour estimate, in the same way as the Valley Model, to identify potential threats to ambient standards or increments. MCRSVAL can also provide an estimate of the annual average impact.

3. RADM is a sophisticated mathematical representation of transport and diffusion which can be applied in complex terrain situations. Its application to Valdez suffers from two major problems: a lack of necessary detailed input data and a possible tendency to underestimate concentrations. Much detailed meteorological information is needed to properly specify the initial conditions and the boundary conditions in the model. This is particularly true for vertical wind profiles, for example. Vertical wind data from several locations around the area would be essential input to a three-dimensional model of Port Valdez. The "Guideline on Air Quality Models" recognizes this problem inherent in sophisticated numerical models when it states on p. 15 that "A model which requires detailed, precise input data should not be applied when such data are unavailable." In addition to the lack of data problem, RADM may tend to underestimate concentrations due to its treatment of calm winds, plume impingement on elevated terrain, and diffusion close in to a source. Although RADM has the potential to better represent the actual physical conditions in complex terrain, the technical basis to accept the model results is inadequate.

D. Model Input

To estimate maximum concentrations for comparison with the NAAQS, the emissions from all existing sources in the Port Valdez area and the proposed Alpetco sources were included in the model analysis. Emissions from the proposed Alpetco sources only were used as input to determine compliance with the PSD increments. To ensure that maximum values were modeled, emission rates from all stationary sources were based on maximum allowable limits, or they were based on maximum design capacity if limits are not specified. Maximum 3-hour and 24-hour average emission rates were determined for ships based on worst-case operating scenarios and assuming the ships were burning fuel containing 2% sulfur.

Initially, MCRSVAL and Valley were run using generalized receptor grid systems to identify potential problem areas. Figure 4 shows the general receptor grid used in MCRSVAL; the general grid used in Valley is similar. The high concentration areas identified by the general grid were then modeled with a very refined (closely spaced) receptor grid in order to determine the maximum concentration values. Figure 4 also identifies the refined grid areas.

Meteorological input to the Valley Model for the 24-hour estimate includes a low wind speed (2.5 meters per second) and moderately stable atmospheric conditions. Furthermore, the wind is assumed to be in a given direction for 6 hours out of the 24-hour period. All wind directions were modeled to determine maximum impacts. For the annual impact estimate the Valley Model requires a joint frequency distribution of wind speed, wind direction, and stability, i.e., a stability wind rose. A stability wind rose was developed from the one-year meteorological input files used in MCRSVAL discussed below.

MCRSVAL requires a meteorological file which contains values for wind speed, wind direction, stability, surface temperature, and mixing height for each hour of a year. Due to expected differences in winds which affect the two major groups of sources, Alpetco and Alyeska, two separate meteorological input files were developed--one for existing sources and one for proposed sources. Since a complete year of data is not available from Alpetco Site #1, which would be most representative of the meteorology affecting the proposed Alpetco sources the Site #1 data had to be supplemented with data collected at the Valdez Airport and at the Coast Guard Building by the National Weather Service. Figure 5 is a wind rose from the input for proposed sources. The meteorological input file for existing sources was made up mainly from data collected at Jackson Point, supplemented by data collected at the Coast Guard Building.

MCRSVAL uses the input files of hourly data to calculate a concentration at each receptor for each hour of the year. The model then calculates average concentrations for each 3- and 24-hour period of the year and identifies the maximum values.

E. Model Results

CO--To determine whether or not the CO emissions from the proposed Alpetco sources would cause a significant impact, MCRSVAL was used with Alpetco sources only. The maximum concentrations occurred on the hillside east of the refinery. The results are presented in Table 6. The maximum values are below the Level of Significance indicating no further air quality analysis is required for CO emissions.

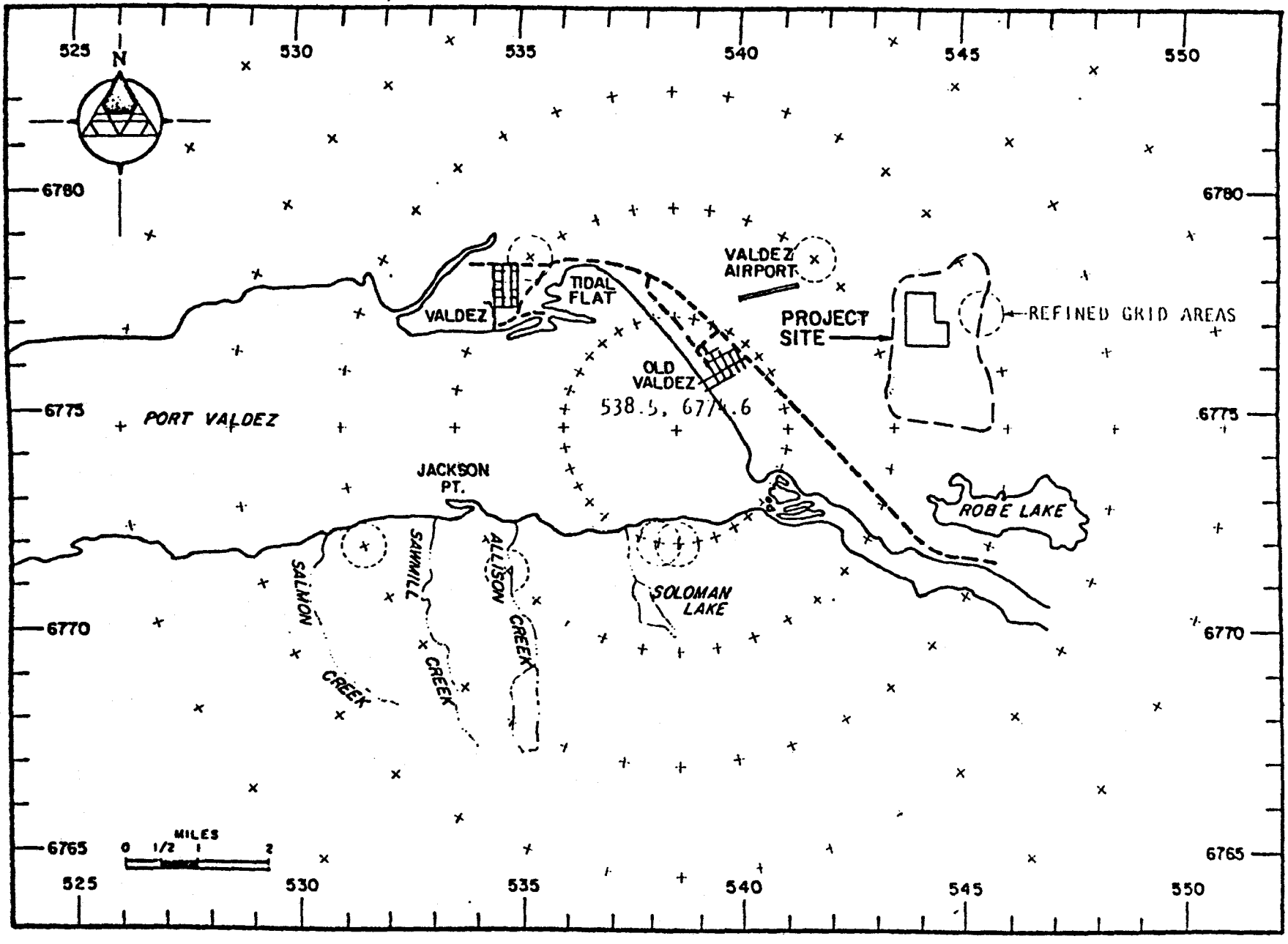


FIGURE 4
MCRSVAL RECEPTOR GRID

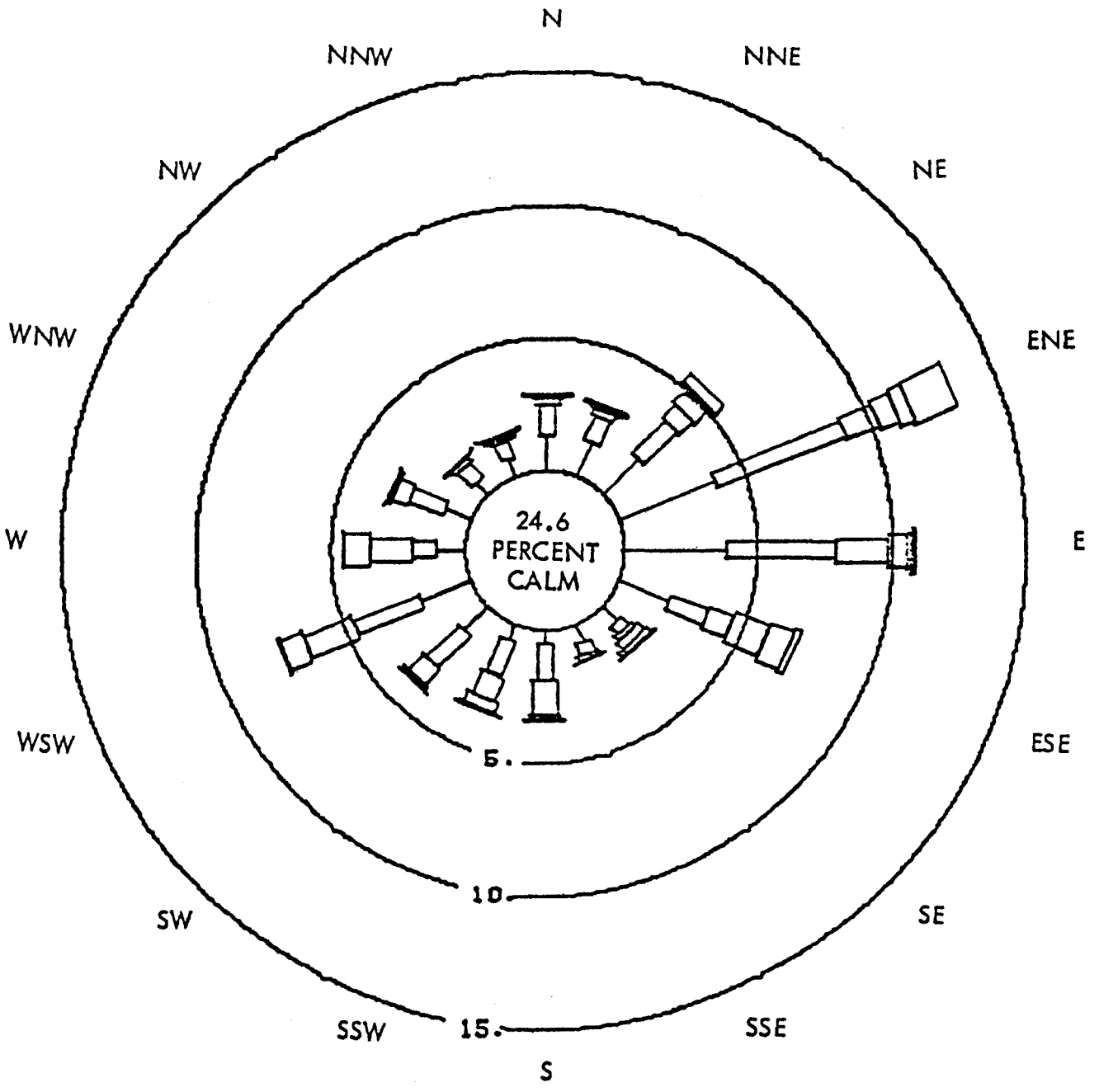


FIGURE 5

HOURLY AVERAGE SURFACE WINDS
PERCENTAGE FREQUENCY OF OCCURRENCE
PROPOSED SOURCES WIND ROSE (6/1/78 - 5/31/79)

Table 6

CO AND NO_2 RESULTS

in micrograms per cubic meter

POLLUTANT	AVERAGING PERIOD	MAXIMUM MODEL ESTIMATE	NAAQS	LEVEL OF SIGNIFICANCE
CO	1 hour	225	40,000	2,000
	8 hour	73	10,000	500
NO_2	Annual	28	100	1

Table 7

SO_2 RESULTS

in micrograms per cubic meter

All Existing and Proposed Sources Considered

AVERAGING PERIOD	MCRSVAL MAXIMUM ESTIMATE	MCRSVAL 2ND HIGH ESTIMATE	NAAQS
3 hour	2,808	2,665	1,300
24 hour	360	301	365
Annual	36	--	80

NO_2--To determine the maximum annual impact, the Valley Model was used in the annual mode. NO_2 emissions from all existing and proposed sources were considered. The maximum impact occurred on the hillside east of the refinery and was mainly a result of refinery emissions. The maximum estimate listed in Table 6 indicates there will be no apparent threat to the NO_2 standard.

SO_2--Emissions from all existing and proposed sources were input to MCRSVAL to determine compliance with NAAQS for SO_2. Maximum impacts were shown to occur near the Alyeska Terminal about 2 kilometers southwest of Jackson Point during low wind speed, stable conditions. The results are listed in Table 7.

The value indicated as "2nd High Estimate" is the highest of the second-highest concentrations estimated during the year by MCRSVAL. This value is appropriate for comparison with short-term NAAQS and PSD increments since one exceedance per year is allowed.

The MCRSVAL results indicate there may be a potential violation of the 3-hour (secondary) NAAQS in a small area on the hillside near the Alyeska tanker terminal. (It should be remembered that, as discussed in Subsection C, MCRSVAL is not considered appropriate for the 3-hour estimate; however, EPA has no recommended technique to estimate a 3-hour impact in complex terrain. For this reason these model results are presented here).

These 3-hour estimates were calculated assuming the worst-case emissions from both the Alpetco and Alyeska tankers occurred during each and every 3-hour period of the year. Dames & Moore estimated from actual tanker traffic data that four or more tankers arrive in Valdez within a 24-hour period 7.55% of the time. This should be a conservative estimate of the probability of these worst-case emissions occuring during a year. The probability of occurrence of the meteorological conditions which caused the high concentrations is determined by the model using worst-case emissions; this is simply the number of 3-hour periods over the standard, which in this case was about 20. The joint probability of these two events (emissions and meteorology) is the product of the two individual probabilities. This assumes independence of emissions and meteorology and that all of the high concentration is caused only by the Alyeska tankers. Other sources contribute very little to the high values. The joint probability is then 7.55% of 20 periods per year or about 1.5 periods per year. This is less than two periods per year so that on a probabilistic basis there should be no violation. It is recognized that there are large uncertainties in this approach, but it is believed to be conservative, mainly due to the overestimate of the frequency of occurrence of the worst-case emissions.

Emissions from the proposed Alpetco sources only were input to Valley Model and MCRSVAL to determine compliance with the Class II PSD increments. Maximum impacts occurred on the hillside east of the refinery and on the hillside south of the Alpetco tanker dock. The results are listed in Table 8. Again, the appropriate MCRSVAL value to compare with the short-term increments is the "2nd High Estimate".

The Valley Model indicates potential violations of the 24-hour and annual increment. In fact, the Valley Model estimate is in excess of the 24-hour NAAQS for SO_2 of 365 micrograms per cubic meter. In limited comparisons of Valley Model estimates with measured concentrations at other complex terrain locations, the Valley Model has been shown to slightly underpredict at some locations and greatly overpredict at others (see Burt, 1977).

In the two regions of maximum impact at Valdez, the areas actually exceeding the short-term increments were very small, less than a few hundred meters in diameter. The meteorological conditions which led to the high concentrations were, as before, low wind speed and stable conditions. Often it was found in the MCRSVAL analysis that one particular hour during the high 3- or 24-hour periods contributed significantly to the increment exceedance as the wind direction for that hour was directly toward the critical impact area. Considering the area where the exceedances were caused by the Alpetco tanker, the probability of occurrence can again be taken into account. The refinery capacity requires only one tanker every third day. The worst-case emissions only occur for at most 12 hours of that day so that the probability of occurrence is then 12 out of 72 hours, or about 17% of the time. MCRSVAL indicated no exceedances of the 24-hour increment caused by the Alpetco tanker and four periods during the year when exceedances of the 3-hour increment occurred. The joint probability of occurrence is then 17% of four priods or less than one period per year. On a probabilistic basis then no violation of Class II increments should occur on the hillside immediately south of the Alpetco dock.

Since the refinery emissions are essentially constant throughout the year, the number of periods exceeding the short-term increments caused by the refinery can not be reduced through a probablistic argument. MCRSVAL indicates there may be violations of the short-term SO_2 increments on the hillside east of the refinery. The number of periods exceeding the increment are in parenthesis in Table 8.

Table 8

SO_2 RESULTS

in micrograms per cubic meter

Alpetco Sources Only Considered

AVERAGING PERIOD	VALLEY MAXIMUM ESTIMATE	MCRSVAL MAXIMUM ESTIMATE	MCRSVAL 2ND HIGH ESTIMATE	CLASS II PSD INCREMENT	ADDITIONAL CONTROL ON FCCU 95% EFF. 2ND HIGH ESTIMATE	ADDITIONAL CONTROL ON FCCU 70% EFF 2ND HIGH ESTIMATE
3 hour	--	876 (9)	837	512	507 (0)	591 (3)
24 hour	370	174 (4)	131	91	83 (1)	98 (2)
Annual	24	10	--	20	--	--

() Number of averaging periods during the modeled year exceeding the increment.

The SO_2 results presented so far are based on Alpetco's original proposal which assumes the Fluid Catalytic Cracking Unit (FCCU) has no additional SO_2 control beyond hydrotreating the feed to the unit. The FCCU contributes a major portion fo the maximum concentrations on the hillside. Since BACT is proposed to require additional control, two additional scenarios were modeled to determine the air quality improvement by installation of an SO_2 scrubber on the FCCU. The two scrubber efficiencies which were modeled were 95% and 70%. The results are presented in Table 8. It can be seen that according to MCRSVAL, with a 95% efficient scrubber on the FCCU, violations of the short-term SO_2 increments will not occur. It should be recognized that large uncertainties exist in these screening model estimates.

TSP--Emissions from all existing and proposed sources were input to the Valley Model to determine compliance with NAAQS for TSP. Maximum impacts were shown to occur on the hillside east of the refinery. The results are listed in Table 9. Since there was no apparent threat to NAAQS based on these results using the generalized grid, no concentrations were estimated using the refined grid areas.

To determine compliance with the PSD increments, Alpetco sources only were input to the Valley Model and MCRSVAL. Maximum values again occurred on the hillside east of the refinery. The results are listed in Table 10. The Valley Model was used with a refined grid area to determine the maximum impact. The results indicated a possible violation of the 24-hour Class II increment. The MCRSVAL "2nd High" 24-hour estimate shows compliance and is about 70% of the TSP increment. Since MCRSVAL is acceptable as a screening technique for the 24-hour estimate, violations of the short-term TSP increment would not be expected as a result of the refinery emissions. There appears to be no problem meeting the annual increment. The TSP results discussed so far are based on Alpetco's original proposal which assumes the emission limit for the FCCU is .04 gr/dscf. According to Section II, the BACT limit recommended is .03 gr/dscf. The additional model runs with the FCCU at this BACT emission rate are also presented in Table 10.

F. Hydrocarbons

Because of the complexities involved in the photochemical reactions which take place in the atmosphere to form ozone, it is very difficult to estimate the effects that the hydrocarbon emissions from the proposed Alpetco sources might have on ambient ozone levels downwind. The data needed to perform adequate photochemical modeling are not currently available, and furthermore, substantial

Table 9

TSP RESULTS

in micrograms per cubic meter

All Existing and Proposed Sources Considered

AVERAGING PERIOD	VALLEY MAXIMUM ESTIMATE	SECONDARY NAAQS
24 hour	40*	150
Annual	4*	60

*Not modeled using refined grid area.

Table 10

TSP RESULTS

in micrograms per cubic meter

Alpetco Sources Only Considered

AVERAGING PERIOD	VALLEY MAXIMUM ESTIMATE	MCRSVAL MAXIMUM ESTIMATE	MCRSVAL 2ND HIGH ESTIMATE	CLASS II PSD INCREMENT	BACT LIMIT OF 0.03 gr/dscf MCRSVAL 2ND HIGH ESTIMATE	BACT LIMIT OF 0.03 gr/dscf VALLEY MAXIMUM ESTIMATE
24 hour	72	32	26	37	20	60
Annual	5	2	--	19	1	4

time and financial commitments would be required to obtain the data and perform the model estimates. The following points can be made concerning potential impacts from Alpetco's hydrocarbon emissions:

1. Alpetco's proposed hydrocarbon emissions total 1350 tons per year, while annual emissions from the existing Alyeska tankers alone are approximately 7500 tons. The amount of Alpetco's hydrocarbon emissions can be considered small relative to existing sources in the Valdez area and also relative to the amount of hydrocarbon emissions from large urban areas which are known to cause ozone problems. Furthermore, it is estimated (EPA, 1979) that only about 7% of the hydrocarbon emissions from a new refinery are the highly reactive type which lead to ozone formation.

2. Valdez is located at high latitude which implies a low sun angle the year around. The result is a lower maximum intensity of the sunlight which is required to initiate photochemical reactions. In addition, there is a high frequency of occurrence of cloud cover in Valdez which also would tend to reduce the amount of sunlight available for photochemical reactions.

3. An EPA Staff Report (EPA, 1979) summarizes the results of a photochemical modeling analysis the purpose of which was to determine ozone impacts downwind of rural sources of hydrocarbons. One of the sources modeled was a typical large new refinery with hydrocarbon emissions of 4380 tons per year. Worst-case meteorological conditions were assumed to maximize the amount of increase of ambient ozone levels. The model results caused an increase of only about 4 micrograms per cubic meter, or 0.002 parts per million.

Although existing levels of ozone in Valdez are moderate, it does not appear for the reasons stated above that the proposed Alpetco hydrocarbon emissions will pose a threat to the NAAQS for ozone.

G. Other Impacts

The nearest Class I area is about 300 kilometers northwest of Valdez. No significant air quality impacts from the proposed refinery are expected at this very large distance.

To assess possible impacts on soils, Dames & Moore performed an analysis with the following assumptions: All SO_2 emissions are transformed to sulfates; all NO_x emissions are transformed to nitrates; on an annual basis, all TSP emissions along with sulfates and nitrates are deposited uniformly on the soil surface within a 50-kilometer radius of the proposed refinery site. This results in a total deposition of about one gram per square meter.

Emissions from the proposed Alpetco sources will increase ambient levels of TSP, NO_2, and SO_2, all of which may affect vegetation. It is expected, however, that concentrations will be below NAAQS, and that effects on vegetation will not be significant.

The proposed facilities will increase particle concentration in the atmosphere which may reduce visibility slightly in the area at times. Particulate levels will increase as a result of TSP emissions and possible gas-to-particle conversion of emissions of SO_2, NO_x, and hydrocarbons. Most of the sources at the refinery will not emit visible plumes; however, two of the sources may have visible water vapor plumes extending some distance downwind at times. The tankers which will berth at the Alpetco dock will emit a slightly visible plume. Visible tanker emissions from the existing Alyeska terminal have been observed to accumulate in an elevated stable layer of the atmosphere causing significant visibility reduction within the layer.

IV Findings & Recommendations

Lacking adequate detailed data to perform the air quality analysis using a refined model, screening models had to be relied upon to determine compliance with standards and increments. Based on the results of the screening model analysis, it appears that the proposed Alpetco sources will not cause or contribute to a violation of the NAAQS or the PSD increments.

Emission Limitations

The emission limitations based on the BACT evaluation are listed in Table 11.

Compliance Determination

Compliance with the emission limitations shall be demonstrated by the Company conducting source tests and a program of emission monitoring as described below.

1. Compliance testing--compliance testing shall be conducted within 60 days after achieving the maximum production rate at which the refinery will be operated, but not later than 180 days after initial startup of the refinery. The test methods and procedures described in 40 CFR 60.106 shall be followed for determining compliance with the emission limitations for the refinery fuel gas system, the Claus sulfur recovery unit, and the FCC regenerator. In addition, EPA

TABLE 11
Emission Limitations

Source	SO_2 conc/ef[1/]	SO_2 kg/hr (lb/hr)	NO_x conc/ef	NO_x kg/hr (lb/hr)	PM conc/ef	PM kg/hr (lb/hr)	PM opacity (%)	CO conc/ef	CO kg/hr (lb/hr)	HC kg/hr (lb/hr)	Equipment or operating specifications	Comments
Refinery Fuel Gas	80mg/dscm (0.035gr/dscf)	H_2S --										The average SO_2 emission factor for the combined refinery gas/flexicoker gas is 24.3 ng/J (56.6 lb/10^9BTU)
Flexicoker Fuel Gas	155mg/dscm total sulfur (0.067gr/dscf)											
Combustion Devices (Total)	--	85 (187)	70ppm at 3% O_2 34.4ng/J (80lb/10^9BTU)	90 (198)	--	--	5					Low NO_x burners and oxygen monitorings will be used.
Fluid Catalytic Cracker (FCC)	12ppm	5 (11)			0.75kg/1000kg coke burnoff	20 (44)	20	500ppm	96 (212)			Based on a 95% efficient FGD system. Particulate concentration is about 70mg/dscm or 0.03gr/dscf
Sulfur Recovery	0.015% by volume 0% O_2 dry basis	7.1 (15.6)										
Flexicoker Sulfur recovery vent	--	0.8 (1.8)										
Gas Turbines	3.2ng/J (7.43lb/10^9BTU)	3.2 (7.1)	(0.0075E) +F % by volume at 15% O_2	94 (207)	--	--	5				F / 0; 0.04(N); 0.004+0.0067(N-0.1); 0.005 — Fuel Bound Nitrogen=N: N < 0.015; 0.015 < N < 0.1; 0.1 < N < 0.25; N > 0.25	Based on the use of refinery gas as fuel E=14.4kg/watt.hr / actual ISO heat rate

1/ conc/ef means a concentration or an emission factor limitation

Source	SO_2 conc/ef	SO_2 kg/hr (lb/hr)	NO_x conc/ef	NO_x kg/hr (lb/hr)	PM conc/ef	PM kg/hr (lb/hr)	PM opacity (%)	CO conc/ef	CO kg/hr (lb/hr)	HC kg/hr (lb/hr)	Equipment or operating specifications
Solid Waste Incinerator	--	1.25 (2.8)			70mg/ dscm 0.03gr/dscf	0.04 (.09)	10				
Storage Tanks										58 (128)	Pressure tanks for liquids with TVP 76.6kPa. Internal floating roofs with double seals or equivalent for liquids with 10.3 TVP 76.6 kPa
Product Loading Terminal											A vapor recovery system to collect and incinerate the HC emissions. The design efficiency of the incinerator must exceed 99%.
Process Fugitive											Specifications for valves, pumps, and compressors must include the optimum sealing techniques available from the manufacturers. Process drains must be trapped. Oil/water separators must be covered. A HC monitoring and maintenance plan must be submitted to EPA for approval 1 year prior to projected refinery startup.

Method 6 (40 CFR 60; Appendix A) shall be used to determine compliance with the FCC regenerator SO_2 limitation. EPA Method 15 shall be used to determine compliance with the total sulfur emission limitation for the flexicoker gas system. EPA Method 7 shall be used to determine compliance with the NO_x emission limitation for the combustion devices. Only one combustion device of each type needs to be tested. The company shall submit a plan for EPA approval proposing which combustion devices to test. The test methods and procedures described in 40 CFR 60.335 shall be followed for determining compliance of the gas turbines with the NO_x emission limitation.

2. Compliance Monitoring--The emission monitoring requirements of 40 CFR 60.105 and 60.334 shall be followed. In addition, continuous oxygen monitoring instruments shall be installed to record the excess oxygen in the combustion devices. A continuous SO_2 monitor shall be installed on the FCC regenerator stack unless the company can demonstrate that sufficient process monitoring data will be recorded to determine the SO_2 emissions. All continuous monitoring instruments must meet the requirements contained in 40 CFR 60.13. Process monitors shall be installed to record pressure drop across the scrubber, liquid flow rate and any other process variable necessary to insure proper operation of the scrubber on the solid waste incinerator. The thermal incinerator for the product loading terminal shall be equipped with instruments to continuously monitor the incinerator temperature and to determine the residence time within the combustion zone.

V. References

Alyeska Pipeline Service Company, 1974, "Summary Report, Air Quality for the Trans Alaska Pipeline System: Terminal".

Burt, E. W., 1977, "Valley Model User's Guide", U.S. E.P.A., EPA-450/2-77-018.

EPA, 1978, "Guideline on Air Quality Models", OAQPS No. 1.2-080, EPA-450/2-78-027.

EPA, 1979, "The Ozone Impact of Rural Sources", Staff Report, Source Receptor Analysis Branch, OAQPS, Research Triangle Park, NC.

Holzworth, G. C., 1972, "Mixing Heights Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States", U.S. E.P.A., OAP No. AP-101.

FINAL DETERMINATION DOCUMENT
PREVENTION OF SIGNIFICANT DETERIORATION
APPROVAL OF CONSTRUCTION OF THE ALASKA PETROCHEMICAL COMPANY OIL REFINERY AND MARINE LOADING TERMINAL AT VALDEZ, ALASKA

SCOPE

This document presents the final determination by the Environmental Protection Agency (EPA) to approve the Alaska Petrochemical Company's (ALPETCO) proposal to construct an oil refinery and marine loading terminal at Valdez, Alaska. This determination is made under the federal requirement of Part C, Title 1 of the Clean Air Act, "Prevention of Significant Deterioration of Air Quality (PSD)".

BACKGROUND

On December 11, 1979, EPA received a complete PSD permit application from ALPETCO requesting approval to construct an oil refinery and marine terminal at Valdez, Alaska. EPA reviewed this material and presented its findings in a preliminary determination document which was released for public comment on January 14, 1980. A preliminary determination to approve the refinery construction was issued on the basis that the National Ambient Air Quality Standards and PSD increments would not be violated, and that the proposed emission standards represented best available control technology (BACT). Affected government agencies were notified of their opportunity to submit written comments and public hearings were held on January 29, 30 and 31, 1980. The record closed on February 16, 1980.

PUBLIC COMMENT

No adverse public comments were made at the public hearings and no comments regarding air quality were received during the comment period.

FINDINGS

Based on our review of the application, EPA finds that the "Class II" air quality increments and the NAAQS will not be viclated as a result of this project and that the emission limits listed in the PSD permit constitute BACT. In light of these findings, EPA grants approval to ALPETCO to construct an oil refinery and marine loading terminal at Valdez, Alaska. This approval is subject to the terms and conditions set forth in the MAR 21 , 1980 letter of approval to the ALPETCO company.

U.S. ENVRIONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

APPLICATION OF: Alaska Petrochemical Company 601 West 5th Avenue Anchorage, Alaska 99501	No. PSD-X80-08 APPROVAL OF APPLICATION TO CONSTRUCT

Pursuant to the Agency regulations for the Prevention of Significant Deterioration of Air Quality (PSD) set forth at Title 40 Code of Federal Regulations, Part 52 and based upon information submitted on October 8, 1979, November 23, 1979, December 4, 1979, and December 11, 1979 the Regional Administrator now finds as follows:

FINDINGS

1. The Alaska Petrochemical Company (ALPETCO) proposes to construct an oil refinery and marine loading terminal at Valdez, Alaska.

2. An analysis of the projected emissions indicates that the proposed new construction has the potential to emit more than 100 tons per year of sulfur dioxide (SO_2), particulate matter (PM), carbon monoxide (CO), nitrogen oxides (NO_x) and hydrocarbons (HC), and therefore is subject to PSD review for these pollutants.

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3. Since the proposed source emissions will exceed the limits set forth in §52.21(j)(2) and §52.21(k)(1) (ii) for SO_2, PM, CO, NO_x and HC, these emissions must be controlled by the best available control technology and an ambient impact analysis must be conducted for those pollutants.

4. Modeling analyses of SO_2, PM, CO, NO_x and HC have been conducted and demonstrate that while emissions of these pollutants will increase, the construction will not cause violations of any National Ambient Air Quality Standard or a PSD air quality increment, so long as the plant is operated in accordance with the conditions specified below. With the application of best available control technology, as requied by Section 165(a)(4) of the Clean Air Act, operation of the proposed oil refinery and marine loading terminal will meet the applicable PSD requirements.

5. The proposed construction will be located in an area designated as "Class II" under Section 162(b) of the Clean Air Act (42 USC 7472).

ACCORDINGLY, it is hereby determined that subject to the conditions set forth below, ALPETCO will be permitted to construct an oil refinery and marine loading terminal, as described in its PSD application received on October 8, 1979 and supplemented on of November 23, 1979, December 4, 1979 and December 11, 1979.

APPROVAL CONDITIONS

1. Emission of SO_2, PM, NO_x, CO and HC shall not exceed the following limits.

Emission Limitations

Facility	Pollutant	kg/hour (lb/hour)	Concentration or Emission Factor Limitation
Combustion Devices (Total)	SO_2	85 (187)	NOTE 1

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Emission Limitations

Facility	Pollutant	kg/hour lb/hour	Concentration or Emission Factor Limitation
	NO_x	90 (198)	70 ppm at 3% O_2 34.4 ng/J (80 lbs/10^9 BTU)
	PM	-	5% opacity
Refinery Fuel Gas (NOTE 2)	SO_2		80 mg/dscm H_2S (0.035 gr/dscf
Flexicoker Fuel Gas	SO_2		155 mg/dscm Total Sulfur (0.067 gr/dscf)
Fluid Catalytic Cracker (FCCU)	SO_2	5 (11)	12 ppm
	PM	20 (44)	0.75 kg/1000 kg Coke burnoff. 20% opacity. NOTE 3
	CO	96 (212)	500 ppm
Sulfur Recovery (SRU)	SO_2	7.1 (15.6)	0.015% by volume at 0% O_2 dry basis
Flexicoker SRU Vent	SO_2	0.8 (1.8)	
Gas Turbines	SO_2	3.2 (7.1)	
	NO_x	94 (207)	(0.0075E)+F% by volume at 15% O_2 NOTE 4
Solid Waste Incinerator	SO_2	1.25 (2.8)	
	PM	0.04 (0.09)	70 mg/dscm (0.03 gr/dscf) 10% opacity
Storage Tank (Total)	HC	58 (128)	Based on the equipment standard and operation practices below:
			Pressure tanks shall be used for liquids with a TVP greater than

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Emission Limitations (cont.)

Facility	Pollutant	kg/hour lb/hour	Concentration or Emission Factor Limitation
			76.6kPa. Internal floating roofs with double seals or equivalent shall be used for liquids with TVP greater than 10.3 but less than 76.6 kPa.
Product Loading Terminal	HC		The following equipment standard and operating practice shall be substitutes for an emission standard: A vapor recovery system shall be installed and operated to collect and incinerate the HC emissions treater during vessel loading. The design efficiency of the incinerator must exceed 99%.
Process Fugitives	HC		The following equipment standard and operating practice shall be substituted for an emission standard: Specifications for valves, pumps and compressors must include the optimum sealing techniques available from the manufacturers. Process drains must be trapped. Oil/water separators must be covered. A HC monitoring and maintenance plan must be submitted to EPA for approval one year prior to projected refinery startup.

NOTE 1 The average SO_2 emission factor for the combined refinery gas/flexicoker gas is 24.3 ng/J (56.6 lbs/10^9 BTU)

NOTE 2 Includes fuel gas to combustion devices and gas turbines

NOTE 3 Particulate concentration is about 79 mg/dscm or 0.03 gr/dscf

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NOTE 4 Based on the use of refinery gas as fuel

$$E = \frac{14.4\ kg/watt.hr}{\text{actual ISO heat rate}}$$

F	Fuel Bound Nitrogen = N
0	$N \leq 0.015$
0.04(N)	$0.015 < N \leq 0.1$
0.004+0.0067(N-0.1)	$0.1 < N \leq 0.25$
0.005	$N > 0.25$

2. Only the above listed sources shall be permitted for emissions of air pollutants to the atmosphere. Additional sources or design changes which result in an increase in emissions will require formal permit modification in accordance with §52.21.

3. The solid waste incinerator final design shall include a control device capable of 90% removal efficency for SO_2.

4. Compliance testing shall be conducted within 60 days after achieving the maximum production rate at which the refinery will be operated, but not later than 180 days after initial startup of the refinery. The test methods and procedures described in 40 CFR 60.106 shall be followed for determining compliance with the emission limitations for the refinery fuel gas system, the Claus sulfur recovery unit, and the FCC regenerator. In addition, EPA Method 6 (40 CFR 60; Appendix A) shall be used to determine compliance with the FCC regenerator SO_2 limitations. EPA Method 15 shall be used to determine compliance with the total sulfur emission limitation for the flexicoker gas system. EPA Method 7 shall be used to determine compliance with the NO_x emission limitation for the combustion devices. Only one combustion device of each type needs to be tested. The company shall submit a plan for EPA approval proposing which combustion devices to test. The test methods and procedures described in 40 CFR 60.335 shall be followed for determining compliance of the gas turbines with the NO_x emission limitations.

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5. Compliance Monitoring -- The emission monitoring requirements of 40 CFR 60.105 and 60.334 shall be followed. In addition, continuous oxygen or carbon monoxide monitoring instruments shall be installed to record the excess oxygen or carbon monoxide in the combustion devices. A continuous SO_2 monitor shall be installed on the FCC regenerator stack unless the company can demonstrate that sufficient process monitoring data will be recorded to determine the SO_2 emissions. All continuous monitoring instruments must meet the requirements contained in 40 CFR 60.13. Process monitors shall be installed to record pressure drop across the scrubber, liquid flow rate and any other process variable necessary to insure proper operation of the scrubber on the solid waste incinerator. The thermal incinerator for the product loading terminal shall be equipped with instruments to continuously monitor the incinerator temperature and to determine the residence time within the combustion zone.

6. All reasonable measures shall be taken to prevent and reduce emissions of air pollutants to the atmosphere during the period of construction. This shall include but not be limited to activities to prevent particulate matter from becoming air borne from roadways or arising from traffic activities in and about the construction site.

7. The refinery throughput shall not exceed 150,000 barrels per day feed stock.

8. ALPETCO shall notify the Alaska Department of Environmental Conservation (ADEC), in writing of any occurrence of emissions in excess of limits specified above; notification shall be forwarded to ADEC in writing in a timely fashion and in each instance, no later than ten (10) days from the date of such occurrence. The notification shall include an

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estimate of the resultant emissions and narrative report of the cause, duration and steps taken to correct the problem and avoid a recurrence. ALPETCO shall contemporaneously send a copy of all such reports to EPA.

9. This approval shall become void if on-site construction is not commenced within eighteen (18) months after receipt of the approval or if on-site construction once initially commenced is discontinued for a period of eighteen (18) months.

10. As approved and conditioned by this permit, any construction, modification or operation of the proposed facility shall be in accordance with the application which resulted in this permit. Moreover, any such activity which is undertaken in a manner inconsistent with this permit shall be subject to EPA enforcement action under the Clean Air Act.

11. This permit in no way constitutes a waiver which relieves ALPETCO from its obligations to meet requirements under other parts of the Clean Air Act, including Section III, New Source Performance Standards, or from other obligations as a result of permits required by other Federal or State laws.

12. EPA and ADEC shall be notified of the commencement of construction date and the start up date not later than within thirty (30) days before the date these events begin.

13. The United States Court of Appeals for the D.C. Circuit has issued a ruling in the case of Alabama Power Co. v. Douglas M. Costle (78-1006 and consolidated cases) which will have significant impact on the EPA PSD program. The applicant is hereby advised that this permit may be subject to reevaluation and/or modification as a result of the final court decision and its ultimate effect.

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14. Access to the source by EPA or state regulatory personnel shall be permitted upon request for the purpose of compliance assurance inspections. Failure to allow such access is grounds for revocation of this permit.

March 21, 1980
Date

Donald P. Dubois
Regional Administrator

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STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION

JAY S. HAMMOND, GOVERNOR

POUCH O – JUNEAU 99811

March 17, 1980

CERTIFIED MAIL
RETURN RECEIPT
REQUESTED

Mr. Ronald R. Dagon, Manager
Environmental Programs & Permitting
The Alpetco Company
3700 Buffalo Speedway
Houston, Texas 77098

Dear Mr. Dagon:

The Department has evaluated the Prevention of Significant Deterioration Permit Application submitted by Alaska Petrochemical Company for the Contruction of a Refinery and Petrochemical Complex in Valdez, Alaska transmitted by your letter of October 8, 1979. We have also reviewed the four-volume supplement submitted November 23, 1979, additional information accompanying your letters of December 4, 11, and 19, 1979 and February 20, 1980 and the Draft Environmental Impact Statement for the refinery dated December 7, 1979. Based on this evaluation, the Department has determined that:

a) The increased emissions of particulate matter, sulfur dioxide, nitrogen oxides and carbon monoxide will not cause violations of the Alaska Ambient Air Quality Standards specified in 18 AAC 50.020.

b) Particulate matter and sulfur dioxide emissions from the turbines, process heaters, boilers and flares will not exceed the standards specified in 18 AAC 50.050 so long as desulfurized process gas is the only fuel burned.

c) Sulfur dioxide emissions from the sulfur recovery plants will not exceed the standards specified in 18 AAC 50.050 so long as the plants are designed, operated and maintained to reduce potential gaseous sulfur emissions by more than 97%.

d) The electrostatic precipitator design specifications are lacking in detail, but at control efficiencies greater than 98%, particulate matter emissions from the fluidized catalyst cracking unit regenerator will comply with standards specified in 18 AAC 50.050.

e) A hydrotreater will remove more than 90% of the sulfur in the feedstock to the fluidized catalyst cracking unit, resulting in sulfur dioxide emissions from the regenerator which will comply with standards specified in 18 AAC 50.050.

f) The process waste incinerator design specifications and operating parameters are lacking in detail and do not affirmatively demonstrate compliance with requirements specified in 18 AAC 50.040.

g) Reasonable precautions have been taken to minimize excessive hydrocarbon emissions from storage tanks, piping, valves and other equipment.

Therefore, Permit AQC-525 is granted for the construction and operation of the Valdez Refinery and Petrochemical Complex, with the condition that final design specifications for all air contaminant emission control systems be submitted to the Department for review and approval. On site fabrication, installation or construction of any process unit which requires emission control systems or units to achieve compliance is prohibited until the Department grants final approval of design specifications.

Please note the permit has thirteen (13) conditions and expires January 30, 1984. Conditions 5 and 6 require that an evaluation of the impacts on air quality due to any process design changes which might be made be submitted by The Alpetco Company to the Department by December 30, 1980 and the final design specifications for each emission control system by December 30, 1981. Based on review of these submittals, the Department may modify or amend this permit in part or in its entirety, as appropriate.

Conditions 7 and 8 require that a monitoring network be established and operated to measure any changes in ambient air quality due to operation of the refinery.

Conditions 9 and 10 require that source tests be conducted, and continuous stack monitors be installed, to measure pollutant concentrations in major effluent stacks.

Many of the unit processes must comply with federal regulations promulgated in 40 CFR 60 Subparts J and/or GG. Please contact Mr. Robert Chivvis of the U.S. EPA Alaska Operations Office in Anchorage, 271-5083, for specific requirements. Your facility must also be reviewed for compliance with the Prevention of Significant Deterioration Provisions of the Clean Air Act Amendments of 1977. Mr. Michael M. Johnston of the U.S. EPA Region X Office in Seattle is responsible for this review.

You have a right to an adjudicatory hearing to contest the Department's action. A request for an adjudicatory hearing must be made within 30 days of receipt of this letter by mailing or delivering a statement of issues to the Alaska Department of Environmental Conservation, Pouch O, Juneau, Alaska, 99811. The statement of issues must state the basis for the hearing request and otherwise conform with AS 44.62.370. A failure to request a hearing within 30 days of receipt of this letter constitutes a waiver of your right to administrative or judicial review of this action.

Sincerely,

C. Deming Cowles

C. Deming Cowles
Deputy Commissioner

Enclosure: AQC-525

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR QUALITY CONTROL
PERMIT TO OPERATE

Permit No. AQC-525 Date of Issue: March 17, 1980

The Department of Environmental Conservation, under authority of AS 46.03 and 18 AAC 50.120, issues an Air Quality Control Permit to Operate to

THE ALPETCO COMPANY
3700 BUFFALO SPEEDWAY
HOUSTON, TEXAS 77098

for the operation of the Valdez Refinery, associated fuel burning equipment, sulfur recovery plants, fluid catalyst cracking unit, process waste incinerator, safety flare and storage tanks as described in the Alaska Petrochemical Company "Prevention of Significant Deterioration Permit Application" dated October 8, 1979, "Supplement to Prevention of Significant Deterioration Application" (Vol. I-IV) dated 23 November 1979, letters dated December 4, 11, and 19, 1979 and supplemental information transmitted by The Alpetco Company letter dated February 20, 1980.

Located about six miles east of Valdez, Alaska in Sections 31 and 32, T8S, R5W, Section 6, T9S, R5W and Section 1, T9S, R6W (CRM).

Under the conditions:

1. Permittee shall comply with the State Ambient Air Quality Standards established in Section 020 and the applicable emission limitations specified in Sections 040 and 050 of the State Air Quality Control Regulations 18 AAC 50.

2. Any unit process design changes which may alter either the quality or quantity of air contaminant emissions from the proposed refinery shall be reported by December 30, 1980 to the Department together with an evaluation of any change in the original estimates of impacts on Ambient Air Quality Standards and Prevention of Significant Deterioration increments.

3. Final engineering designs and specifications such as a set of "Engineering for Cost Estimate" drawings and performance specifications for each air contaminant emission control unit/system are to be submitted to the Department by December 30, 1981 for final approval.

4. Permittee shall not commence on site fabrication, installation or construction of any process unit requiring an emission control unit/system until the final design of the control unit/system has been approved by the Department.

5. Permittee shall maintain and operate all fuel burning equipment, processes, emission control devices and monitoring systems so as to provide optimum air quality control during all operating periods.

6. Permittee shall establish, maintain and operate a continuous meteorological and air quality monitoring network as described in Exhibit B. Instruments, siting, operation, calibration and data reduction shall be in accordance with applicable state guidelines. The monitoring network shall be operational at least 90 days prior to startup of the first process unit, and the Department shall be notified in writing ten (10) days prior to placing the monitoring network into operation.

7. Permittee shall maintain and operate the meteorological and air quality monitoring equipment to maximize data collection and accuracy at all times, assuring that at least ninety percent of possible data is recovered and the data is of high quality. If any continuous instrument is malfunctioning or non-operable for two or more consecutive days, permittee shall notify the Department during the third day of inoperability, indicating the cause of failure and the anticipated time required to repair the instrument.

8. Source tests as described in Exhibit D shall be performed within six (6) months of startup and the results reported to the Department. Prior notification to and approval by the Department of the date and conditions of each test is required. The Department may require additional tests if deemed necessary to ascertain compliance with applicable standards.

9. Continuous monitors as described in Exhibit C shall be installed, maintained, and operated to measure fuel quality and consumption, air contaminant emissions concentrations and opacity. If any continuous sulfur dioxide monitor is malfunctioning or non-operable for 24 hours or more, and any other monitor is malfunctioning or non-operable for seven or more consecutive days, permittee shall notify the Department on the second or eighth day, as appropriate, indicating the cause of failure and anticipated time required to repair the instrument.

10. Air Contaminant Emission Reports as described in Exhibit A and Meteorological and Air Monitoring Network Data Reports as described in Exhibit B shall be submitted to the Department for each calendar quarter by January 30, April 30, July 30, and October 30 each year.

11. Permittee shall maintain test results, monitoring instrument recorder charts and other applicable data in an active file for not less than one (1) year, and have them accessible on request to the Department for not less than three (3) years.

12. The Department, with permittee's approval, is allowed access to permittee's facilities to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit and state environmental laws and regulations.

13. A copy of this permit shall be clearly displayed, and the State Air Quality Control Regulations 18 AAC 50 kept on file, at the permitted facility location.

This permit expires 30 January 1984 and may be revoked or suspended in accordance with 18 AAC 50.130.

C. Dennis Bowles

DEPUTY COMMISSIONER
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

EXHIBIT A
PERMIT TO OPERATE AQC-525
AIR CONTAMINANT EMISSION REPORT

An Air Contaminant Emission Report shall be submitted to the Department quarterly by January 30, April 30, July 30, and October 30 each year. This report is to be submitted for any period during which the equipment is tested or operated. The report shall include, but not be limited to, the following information:

NAME OF FIRM
LOCATION OF FACILITY
PERIOD OF REPORT

		1st Month	2nd Month	3rd Month
1.	DAYS OPERATED	number of hours or days		
2.	PRODUCTION	barrels crude oil throughput		
3.	FUEL CONSUMPTION*			
a.	11 heaters/boilers totaling 949.38 mm Btu/hr associated with the following process units: hydrogen production, naphtha hydrotreater, sulfolane extraction, vacuum gas oil hydrotreater, HF alkylation, catalytic polymerization	indicate type of fuel and quantity in mmcf, or other appropriate unit of measure; report the sulfur content, as H_2S, based on at least five analyses during each month of the first quarter of operation		
b.	4 gas turbines totaling 955 mm Btu/hr.	indicate type of fuel and quantity in mmcf, barrels or other appropriate unit of measure; report sulfur content of any liquid fuel burned based on representative or daily sampling		
c.	12 heaters/boilers totaling 1501 mm Btu/hr associated with the following process units: crude distillation, vacuum distillation, distillate hydrocracker, catalytic reformer	indicate type of fuel and quantity in mmcf, or other appropriate unit of measure; report the sulfur content, as H_2S, based on at least ten analyses during each month of the first quarter of operation		

* Note: For purposes of this report, the total quantity of refinery gas and low-Btu flexicoker gas produced daily may be reported, rather than the quantity of refinery gas and blended fuel gas burned in each unit or set of units.

	1st Month	2nd Month	3rd Month
4. SULFUR RECOVERY PLANTS			
operating days	number of hours or days for each plant		
production	total sulfur, tons		
tail gas incinerator	hours and dates operated		
5. PROCESS WASTE INCINERATOR			
operating days	number of hours or days		
wastes burned	mmcf waste gas burned gallons/barrels liquid wastes burned pounds/tons solid wastes burned		
auxiliary fuel	gallons fuel oil burned		
6. FLARE			
operating days	number of days		
flaring	number of hours flared mmcf gas flared		
7. STORAGE TANK TURNOVER	indicate type of fluid and throughput for each tank in barrels or other appropriate unit of measure -- or report an estimate of the total hydrocarbons emitted per month from product storage tanks		
8. CONTINUOUS MONITORING	tabulate the appropriate average air contaminant emission concentrations for each instrument installed pursuant to the monitoring requirements described in Exhibit C; attach a copy of any "excess emission" report as described in Exhibit C		
9. SOURCE TESTING	summarize the results of each analysis and source test conducted pursuant to the testing requirements described in Exhibit D. Include: date of test, testing procedure, processing or firing rate of tested unit, % isokinetic if applicable, concentration or rate in appropriate units, flow rate in ACFM and SCFM, temperature and water vapor content.		

10. Attach a detailed description of equipment failures or operating conditions which may have adversely affected air contaminant emissions. A preliminary report of the incident shall be submitted to the Department within twenty four hours of the incident. A separate report is required for each incident.

    Include such information as: date of incident, duration, nature of the occurrence, equipment failures, steps taken to minimize emissions, measures taken to avoid recurrence, available emissions and ambient air data, and a general description of the weather.

11. Attach a brief discussion of any change in operations, stack monitoring equipment, testing procedures, air quality or meteorological equipment or locations which may affect reported results, or failures which may have affected the results or resulted in incomplete or a lack of data for any given day.

12. Signature of authorized agent preceded by the statement: "I _____ _____, being first duly sworn, hereby certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete and accurate."

13. Notarization: "Subscribed and sworn to before me this _____(day) of _____(month)_____(year)_____(city and state)."

_____
Notary Public's Signature, commission, date of expiration and seal.

EXHIBIT B
AIR QUALITY CONTROL
PERMIT TO OPERATE AQC-525
METEOROLOGICAL AND AIR QUALITY MONITORING NETWORK DATA REPORT

A notarized monitoring report shall be submitted to the Department by January 30, April 30, July 30, and October 30 each year. The report shall include, but not be limited to, the following information:

	1st Month	2nd Month	3rd Month

1. MONITORING SITES

Old Valdez (site 2)	(Continuous SO_2, NO, NO_2, O_3, wind speed, and wind direction)
Valdez Airport	(Continuous SO_2)
Hillside east of refinery (6777E, 545.5N at about the 1000 foot level)	(Continuous SO_2)

2. Data from the meteorological and air quality network shall be reported as hourly averages in SAROAD format and may be submitted on punched cards or magnetic tapes.

3. Attach a detailed description of monitoring network equipment failures or malfunctions which may have resulted in incomplete or erroneous data.

   Include such information as: date of occurrence, duration, nature of the occurrence, steps taken to maximize data recovery and measures taken to avoid recurrence.

4. Signature of authorized agent preceded by the statement: "I_____ _____, being first duly sworn hereby certify that I am familiar with the information contained in this report and that to the best of my knowledge and belief such information is true, complete and accurate."

5. Notarization: "Subscribed and sworn to before me this _____(day) of _____(month)_____(year)_____(city and state)."

_____
Notary Public's signature, commission, date of expiration and seal.

EXHIBIT C
AIR QUALITY CONTROL
PERMIT TO OPERATE AQC-525
CONTINUOUS EMISSIONS MONITORING REQUIREMENTS

Continuous air contaminant emissions monitoring equipment is to be installed on the sources described below. Instrument siting, operating and maintenance procedures must be approved by the Department.

MONITORED SOURCE AND PARAMETER	INSTALLATION AND REPORTING REQUIREMENT
1. CRUDE DISTILLATION COLUMN HEATER	Install monitor on one of two stacks
Particulate matter (opacity)	Report weekly average opacity or transmissivity to the nearest 5% if >15%; indicate <15% if average is less than 15%
Sulfur dioxide	Report weekly average concentration to the nearest 5 ppm
	Report the date, time, duration and average sulfur dioxide concentration for any period during which the average concentration exceeds 40 ppm for three hours or more
Nitrogen oxides	Report monthly average concentration to the nearest 10 ppm
Oxygen	Report weekly average concentration to the nearest 0.5%
2. GAS TURBINE	If monitor is installed as an alternative to requirements in 40 CFR 60.334
Nitrogen oxides	Report monthly average nitrogen oxides concentration to the nearest 10 ppm
	Report the duration and average nitrogen oxides concentration for any period during which the average concentration exceeds 75 ppm for more than seven days

3. FLUID CATALYST CRACKING UNIT CATALYST REGENERATOR	Install monitors on each of two stacks
Particulate matter (opacity)	Report weekly average opacity or transmissivity to the nearest 5%
	Report the date, time, duration and average opacity or transmissivity for any period during which the average opacity or transmissivity exceeds 20% for thirty minutes or more
Sulfur dioxide	Report weekly average concentration to the nearest 20 ppm
	Report date, time, duration and average sulfur dioxide concentration for any period during which the average concentration exceeds 400 ppm for three hours or more
Carbon monoxide	If monitor is installed pursuant to 40 CFR 60.105(a)(2)
	Report monthly average concentration to the nearest 50 ppm
	Report the duration and average carbon monoxide concentration for any period during which the average concentration exceeds 500 ppm for more than seven days
4. SULFUR RECOVERY PLANTS	Install monitor on each stack
Sulfur dioxide	Report weekly average sulfur dioxide concentration to the nearest 10 ppm
	Report the date, time, duration and average sulfur dioxide concentration for any period during which the average concentration exceeds 200 ppm for three hours or more

EXHIBIT D
AIR QUALITY CONTROL
PERMIT TO OPERATE AQC-525
TESTING AND REPORTING REQUIREMENTS

Permittee shall conduct source tests or analyses as described in this exhibit. Initial compliance tests shall be performed and reported to the Department within six months following startup of the applicable unit(s). The results of routine periodic tests are to be reported quarterly as an attachment to the required air contaminant emissions report. Permittee may submit additional source test data at his discretion or to substantiate certification of compliance with applicable regulations.

PROCESS STREAM OR EXHAUST	PARAMETER AND UNIT OF MEASURE	NUMBER OF TESTS AND FREQUENCY
Refinery gas	H_2S ppm	Five per month during each month of the first quarter of operation
	Heating value Btu/ft^3	
Flexicoker gas (or blended fuel gas)	H_2S ppm	Ten per month during each month of the first quarter of operation
	Heating value Btu/ft^3	
	ratio of refinery gas to flexicoker gas in blended fuel gas	Weekly average for twelve consecutive weeks following startup
Liquid fuel oil	S weight %	Representative sampling during any period that fuel oil is burned in turbines or process units,
Crude distillation unit process heater exhaust	NOx ppm	Three during first quarter of operation
	PM gr/scf	Three during first quarter of operation
Gas turbines exhaust	NOx ppm	Three (of one turbine) during first quarter of operation
Fluid catalytic cracking unit catalyst regenerator exhaust	CO ppm	Three during first quarter of operation
	PM gr/scf and lb/1000 lb coke burnoff	Three during first quarter of operation; one each quarter if the average of the first three tests is over 0.04 gr/scf, or one per year if the average is less than 0.04 gr/scf;
		one test during each month the average opacity exceeds 15% for two weeks or more

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PROCESS STREAM OR EXHAUST	PARAMETER AND UNIT OF MEASURE	NUMBER OF TESTS AND FREQUENCY
Sulfur recovery plants		
Tail gas from Claus unit to final process unit	Total sulfur as H_2S ppm	Three per week during first month of operations
Stretford solution tank vent(s)	Total sulfur as SO_2 ppm	Three during first month of operation, twice a month thereafter if over 400 ppm
Tail gas incinerator	SO_2 ppm	Daily when incinerator is in operation if continuous SO_2 monitor is not installed.
Process waste incinerator	SO_2 ppm	Three during first quarter of operation (before and after exhaust gas scrubber); quarterly thereafter if exhaust concentration exceeds 400 ppm
	PM gr/scf	Three during first quarter of operation; quarterly thereafter if exhaust concentration exceeds 0.04 gr/scf
Fugitive hydrocarbon emissions from valves, pumps, flanges, drains etc.	Non-methane HC ppm	Report any incident in excess of 100,000 ppm found during routine inspection by "sniffing" pursuant to the hydrocarbon emission monitoring program established by The Alpetco Company. Include: date, location, identification of equipment causing emissions and ambient HC level

STATE OF ALASKA

JAY S. HAMMOND, Governor

OFFICE OF THE GOVERNOR

DIVISION OF POLICY DEVELOPMENT AND PLANNING

Phone 465-3512

Pouch AD - Juneau 99811

April 3, 1980

Mr. W. James Sweeney
Environmental Protection Agency
605 West Fourth Avenue
Anchorage, Alaska 99501

Mr. Dan Steinborn
Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Subject: Alpetco PSD EPA Facilities Permit
State I.D. No. FP060-80040302

Dear Sirs:

The Division of Policy Development and Planning, in accordance with Public Law 92-583 and 94-370 and Alaska Statutes 46.40.010, has completed review of the consistency of the subject proposal with the Alaska Coastal Management Program (ACMP).

As currently planned, we concur that the proposal is consistent with ACMP.

However, if the project is substantially amended during its implementation such that it affects the coastal zone differently than as represented in the proposal we reviewed, we ask that you contact the State Clearinghouse to determine if an ACMP review of the revision is required.

Sincerely,

Frances A. Ulmer
Director

cc: Tom Barnes, Office of Coastal Management
Alpetco
Rikki Fowler DEC
Commissioner McAnerney, CRA
Commissioner Webber CED
Commissioner Ward, DOT/PF
Bob Baldwin, DNR
Bruce Barrett, ADF&G
Jim Caruth, COE

01-A3LH

Sections 10 and 404

Issues related to the Corps of Engineers Section 10 and 404 permits are considered on the following pages. Included is an attachment from the EIS comment letter received from the U.S. Department of the Interior, Office of the Secretary, which requests further information on the project in order for the office to complete its review of the Sections 10/404 actions. The requested information was supplied in a March 6 letter to that office, which is printed here following the attachment. Comments from the Fish and Wildlife Service, and responses to them follow. The section concludes with pertinent state certifications.

U.S. DEPARTMENT OF MMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
701 C St. Box 43
Anchorage, Alaska 99513

Date : JAN 25 1980

Reply to Attn. of:

To : District Engineer
Alaska District, Corps of Engineers

From : Harry L. Rietze
Director, Alaska Region

Subject: NPACO RF Port Valdez 85
NPACO No. 071-OYD-2-790373

Reference is made to your public notice dated October 19, 1979, from Alaska Petrochemical Company to construct a refinery and petrochemical supporting facilities at Valdez, Alaska.

We have reviewed the above referenced public notice, and the Draft Environmental Impact Statement (DEIS) prepared for the ALPETCO refinery proposal. The public notice attempts to describe several activities associated with the construction/operation of the proposed refinery. Because of its scope, the notice often lacks the detail needed to properly assess potential impact. Nevertheless, we are aware that support documents, including the DEIS, exist and have attempted to review each of the various activities whenever possible. We have also identified several matters in which discrepancies appear or additional information is required. Our specific comments are as follows.

Construction Dock

▼
C1
▲ It is unclear whether this dock will indeed be temporary or, after ownership reverts to the City of Valdez, will remain indefinitely. Additionally, we can find no mention of where the dredged material will be disposed of. We recommend that it be placed as fill material behind the bulkhead, if the material is suitable. Otherwise, upland disposal should be stipulated. Work should be scheduled to avoid the period April 7 to June 7 to avoid interference with juvenile salmon.

Control Levee

No comments.

Slater Creek Diversion

No comments.

Roadway Crossings

a) Valdez Glacier Stream - No comments.

b) Corbin & Corbin Glacier Creeks and Robe River Crossings:

C2 The public notice allows that these crossings may be by concrete bridges or gravel covered culverts. We recommend that bridges be used in the crossing of the Robe River, and for any crossing of Corbin Creek (Robe). We do not feel the bridge designs shown on the public notice are sufficient for our review purposes, and would appreciate the opportunity to study specific plans before approving this design feature.

Product Line Crossing

C3 The importance of the Corbin Creek/Robe River system to the salmon production within Port Valdez has been recognized in the DEIS, which states that the most sensitive area (to a petroleum product spill) would be near Corbin Creek (Robe) since spilled substances would pass through the whole Robe Lake system. The Alaska Dept. of Fish and Game has recommended that an alternative alignment to the west of Corbin Creek (Robe) be utilized, and that the products line across the Robe River be aerial rather than buried. We support these requests and believe their adoption would significantly reduce potential impacts.

C4 All in-water construction should occur from June 1 to July 15 of each year with the exception of the Lowe River within which work should occur only from March 1 to June 15.

Outfall Line

C5 The buried portion of this line may be extended to - 5.0'(MLLW) to avoid exposure at any tidal level. Construction of the line below MHHW should be done from April 7 to June 7.

We appreciate this opportunity to comment on this public notice.

RESPONSE TO COMMENTS BY U.S. DEPARTMENT OF COMMERCE
NATIONAL MARINE FISHERIES SERVICE

C1 It is unclear whether the construction dock will indeed be temporary or, after ownership reverts to the City of Valdez, will remain indefinitely. Additionally, we can find no mention where the dredged material will be disposed of. We recommend that it be placed as fill material behind the bulkhead, if the material is suitable. Otherwise, upland disposal should be stipulated. Work should be scheduled to avoid the period April 7 to June 7 to avoid interference with juvenile salmon.

R1 The information on DEIS p. 39 represents the current plan for eventual ownership of the construction barge dock. Upon completion of the project and expiration of the tidelands lease, ownership of the barge dock would revert to the City of Valdez. It is presumed that the dock would remain in place; however, this would be the option of the City of Valdez. It is the intention to dispose of any dredged material on land. Work on the construction barge dock would be scheduled to avoid the period April 7 to June 7, as suggested.

C2 Regarding the creek crossings on the secondary access road, the Public Notice allows these crossings to be made by concrete bridges or gravel covered culverts. We recommend that bridges be used in the crossing of the Robe River, and for crossing of Corbin Creek (Robe) we do not feel the bridge designs shown on the Public Notice are sufficient for our review purposes, and we would appreciate the opportunity to study specific plans before approving this design feature.

R2 The bridge design configurations shown in the Public Notice are only for the Valdez Glacier Stream crossing on the primary access road. The secondary access road would have three bridge crossings on Robe River, Corbin Creek (Robe) and Corbin Creek (Glacier). Any other drainage ways would be crossed with appropriately sized culverts. Regarding design configuration of these bridges, it is currently planned that the bridges be prestressed, concrete bridges with "H" pile foundations and two 12-foot lanes. The

bridges would be designed at least to the 50-year flood level indicated on the recent City of Valdez flood insurance study.

C3 The importance of the Corbin Creek/Robe River system to the salmon production within Port of Valdez has been recognized in the DEIS, which states that the most sensitive area (to a petroleum product spill) would be Corbin Creek (Robe) since spill substances would pass through the whole Robe Lake system. The Alaska Department of Fish and Game has recommended that an alternate alignment to the west of Corbin Creek (Robe) be utilized, and that the products line across the Robe River be aerial rather than buried. We support these requests and believe their adoption would significantly reduce potential impacts.

R3 The pipelines over Robe River have been changed to an elevated mode in response to comments on the DEIS. The Alaska Department of Fish and Game concurs with this preferred route provided that the state attaches certain design and construction related stipulations to the State of Alaska right-of-way lease in which these pipelines would be constructed. For more detailed information, please see Section II, p. 13-16.

C4 All in-water product pipeline construction should occur from June 1 to July 15 of each year, with the exception of the Lowe River within which work should occur from March 1 to June 15.

R4 Comment so noted. Please see Section II, p. 47, mitigation measure C(3).

C5 The buried portion of the wastewater outfall line may be extended to -5.0' (MLLW) to avoid exposure at any tidal level. Construction of the line below MHHW should be done from April 7 to June 7.

R5 This will be done.

Attachment I

The following outline identifies the key points for which additional information is required in order for us to complete our review of the Corps of Engineers' Public Notices. The need for this information is also reflected in our comments on the draft Environmental Impact Statement.

This is Attachment 1 to the DEIS comment letter from the U.S. Department of the Interior (see Section III, p. 118,) requesting information for the Department's Fish and Wildlife Service. The response letter follows.

1. Roadway Access Route -

   a. Description of primary and alternative routes.

   b. Methods of stream crossing (bridge, culvert) for each route at each stream crossing.

   c. Expected environmental impacts for each alternative route to include siltation and wetland filling.

   d. Projected cost for each route.

   e. Bridge description over Valdez Glacier Stream to include method of anchoring support structures - need specific plans.

2. Construction Barge Dock -

   a. Status of dock after construction is completed.

   b. Location where dredge spoil will be deposited.

   c. Type of dredge to be used.

   d. Time schedule for dredging.

3. Pipeline Crossing -

   a. What sections are to be buried.

   b. Time schedule for construction across streams.

   c. Full description of alternative routes.

   d. Threats to fish and wildlife resources should be more fully discussed for each alternate route.

4. Wastewater Outfall Pipe -

   a. Full description of route.

   b. Method for crossing Valdez Glacier Stream.

   c. Sections to be buried or supported above ground.

d. Feasibility of winter dye plume tests (or similar test for measuring dispersion).

5. Diversion Ditch -

a. Full description of route.

b. Timing stipulations for construction.

c. Full disclosure of anticipated resource impacts.

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

REPLY TO ATTN OF: M/S 529

March 6, 1980

Mr. Paul D. Gates
U.S. Dept. of the Interior
Office of the Secretary
P.O. Box 120
Anchorage, AK 99510

Re: Alaska Petrochemical Company Project -
COE Section 10/404 Permit Applications

Dear Mr. Gates:

As requested in your February 8, 1980 comment letter on the Alpetco Draft EIS, we are responding to your request for additional information on the Corps of Engineers permit actions. This letter will provide the information requested in the outline contained in Attachment I to your letter. For convenience in responding, the replies will be identified in the same numerical order as in your letter.

1. Roadway Access Route

The alternative roadways into the site are still those shown on Figure 3.3-1 in the DEIS. The main access route would be via the existing Glacier Stream haul road and would enter the site at the northeasterly corner in the vicinity of the administrative headquarters of the plant. The secondary access would enter the site from the Richardson Highway on the south. The Alpetco site would be one tract in a larger City of Valdez industrial use zone, and the Glacier Stream haul road will be a central access corridor to the general industrial area. This would be a logical main access route to the refinery. Valdez Glacier Stream would be crossed

with a bridge and a low profile approach roadway. The bridge likely would be a pile supported three span pre-stressed concrete structure. The configuration remains as shown in the DEIS (Attachment B, COE permit applications). The secondary access roadway would cross three streams, Robe River, Corbin Creek (Robe) and Corbin Creek (Glacier), with single span bridge structures. Any other drainage courses would be crossed with culverts. Wetland filling would be minimal, involving mainly any freshwater marsh areas that might adjoin streams the roadbed would have to cross. With an elevated pipeline structure and roadway bridge structures over the streams, siltation concerns should not be significant. It is premature to know what the construction costs might be for the access routes. The bridge over Valdez Glacier Stream is described in some detail with regard to span, foundation and dimension in the COE permit application (see DEIS Attachment B). It is permature to have more detailed engineering plans at this time.

2. Construction Barge Dock

The construction barge dock would not be removed following construction. Upon expiration of the tidelands lease and completion of construction of the plant, ownership of the dock would revert to the City of Valdez. It is planned that the dredge spoil would be deposited upland, somewhere in the vicinity of the Old Valdez townsite that is proposed for the Alpetco mobilization area. Dredge spoil would not be deposited in the waters of Port Valdez. Also, the dredge spoil is not expected to be suitable for backfilling behind the bulkhead. A clamshell dredge would be used for this work. Construction of the barge dock would be scheduled to avoid the period April 7 to June 7.

3. Pipeline Crossing

Some modifications have been made to the mode of construction of the pipeline bundle in response to various comments received. The revised plan is that the pipelines from the plant site to the Richardson Highway would be constructed in an above-ground configuration. The pipelines would then be buried from the Richardson Highway west to the point at which the pipeline route departs from the highway. The crude supply line from the point of connection on the Alyeska line to Dayville Road would also be buried. The remaining westerly portion of the pipeline from the departure point on Dayville Road to the products dock (with the exception of

the final crossing on Dayville Road) would be constructed above ground. For the streams for which there is no in-water construction, there would be no restricted construction periods. In-water construction in Lowe River would be conducted between March 1 and June 15, per your recommendation. The alternate pipeline route along the Richardson Highway and around Knife Ridge proposed by the Alaska Department of Fish and Game is not feasible due primarily to the fact that it crosses an area that had severe responses to the 1964 seismic event. During the 1964 earthquake, the largest individual longitudinal fissure segments observed were located in the general area where this alternate route would be located.

The Alaska Department of Fish and Game is in the process of officially approving the preferred pipeline route as described in the DEIS with certain design-related stipulations. One is that the pipeline be changed from a buried to an elevated configuration, and this has already been done. The other stipulations will be identified and made conditions of the State of Alaska right-of-way permit in which these pipelines would be constructed. The pipeline system should have no significant long-term effects on the wildlife in this area. The pipeline does not cross any unique habitat areas or known migratory routes. Potential threats to the fish resources in this area have been alleviated greatly by changing to an elevated pipeline configuration and the subsequent design stipulation which will be attached to construction of this facility. With proper crossing of this stream during construction, the only remaining threat to the fish resources is that which would be associated with a major catastrophic event such as the 1964 earthquake. Were that to occur, it is highly likely there would be other overriding natural damage to the entire Robe Lake drainage system, such as cutting off water flow to Robe Lake by areawide ground subsidence. We feel that elevating the pipeline and attaching a stipulation package to the pipeline construction will reasonably mitigate potential threats to the fish and wildlife resources in this area.

4. Wastewater Outfall

The proposed route of the wastewater outfall pipe is as shown in DEIS Attachment B, page B-105 in the Corps of Engineers (Port Valdez 85) permit application, sheet 1 of 11. There have not been any changes to this route as shown. John Paulson at CCC/HOK-DOWL indicated that he had recently

sent Dave Dall a larger scale right-of-way map showing this route. It is proposed that the Alpetco pipe be buried across Valdez Glacier Stream, as would all other segments of the pipe from the wastewater treatment facility to the shore of Port Valdez. The draft NPDES permit, DEIS Attachment B, page B-43, item g, does require Alpetco to prepare and submit a report containing all data relative to the determination of dilutions and the design and location of the wastewater outfall diffuser system six months prior to diffuser construction. One of the ways this could be achieved is with a dye plume test. We assume that it would probably be done during the worst case summer months, however, rather than during the winter. The stratified, low flow conditions during summer would be the worst case dilution conditions.

5. Diversion Ditch

There is no diversion ditch per se planned for this project. This was an alternative to rechanneling Slater Creek on the north side of the site. The current plan is to rechannel Slater Creek as shown on the map on page B-114 of DEIS Attachment B. The drawing on Sheet 10 of 11 of the permit application indicates how Slater Creek would be rechanneled to flow directly into Valdez Glacier Stream, rather than through Corbin Creek (Glacier) and then into Valdez Glacier Stream, as it now does. As neither Valdez Glacier Stream nor Slater Creek are anadromous fish streams, no timing stipulations are anticipated for performing this work. We would expect a logical time to do this would be in the spring just after breakup and before the flows increase. There are no known significant resource impacts from rechanneling Slater Creek. As mentioned, the creeks involved do not currently support a fish population. It is also not expected to have an impact on groundwater recharge. During the summertime when there is flow in Slater Creek, there is ample groundwater recharge in this basin from numerous surrounding sources. In the wintertime when groundwater recharge would become most critical, Slater Creek normally is dry and is not believed to contribute anyway.

I hope this will provide you the information you need in sufficient detail to prepare your response to the Corps of Engineers permit application. You will be receiving a review copy of the Final EIS on March 17. Dave Dall indicated that with the above response, the DEIS and the review draft of the Final EIS, he could prepare and send his official

comments to the Corps of Engineers on the 404/Sec. 10 actions by March 28, 1980. It is important to have the comments by this date because EPA is trying to make the EIS a consolidated permitting effort. If there are any further questions, please do not hesitate to contact me.

Sincerely yours,

Deborah K. Kirk
EIS Project Officer

DKK:adh

cc: Dave Dall (U.S. Fish & Wildlife)
John Paulson (CCC/HOK-DOWL)
Ron Dagon (The Alpetco Co.)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
1011 E. TUDOR RD.
ANCHORAGE, ALASKA 99503
(907) 276-3800

IN REPLY REFER TO:

01 APR 1980

Colonel Lee R. Nunn
District Engineer
Alaska District
Corps of Engineers
P.O. Box 7002
Anchorage, Alaska 99510

Re: Port Valdez 85
071-OYD-2-790373

Dear Colonel Nunn:

The interested agencies of the Department of the Interior have reviewed the subject Public Notice, dated 19 October 1979. The applicant, Alaska Petrochemical Company (ALPETCO), has requested a Department of the Army permit under Section 10 of the River and Harbor Act of 1899 and Section 404 of the Clean Water Act of 1977 for the following activities:

(1) Construct a temporary construction dock on the north shore of Port Valdez;

(2) construct a control levee on the east bank of Valdez Glacier Stream;

(3) divert Slater Creek from Corbin Creek (Glacier) to Valdez Glacier Stream;

(4) construct a bridge across Valdez Glacier Stream;

(5) construct a paved roadway across the Robe River, Corbin Creek (Robe), Corbin Creek (Glacier), and related tributaries;

(6) lay a pipeline system (crude, product, and ballast water) across the Lowe River, Robe River, Corbin Creek (Robe), Corbin Creek (Glacier) and related tributaries, and Ambercrombie Creek; and

(7) lay a wastewater outfall pipe from the ALPETCO site, across the Valdez Glacier Stream, to discharge from the north shore of Port Valdez.

A discussion of the proposed activities follows:

R7-1

(1) Temporary Construction Dock - A construction barge dock would be built at the far end of Port Valdez at the former Old Valdez dock site obtained in a twelve-acre state tidelands lease. The site would allow direct access to an adjacent city of Valdez tract of land that ALPETCO would lease for a mobilization yard to offload heavy materials, equipment and prefabricated modules during refinery construction. Sheet piling would be driven along one side of an existing projection of land and fill would be placed behind it. Construction of the dock would require approximately 1,000 cubic yards of dredging and 4,000 cubic yards of fill. The dock would accommodate 100 x 400-foot barges. Upon completion of the project and expiration of the tidelands lease, all facilities, with the exception of the concrete ramp, would be removed. During the two years of construction, equipment and construction materials totaling approximately 750,000 tons would be transported to Valdez by cargo vessels and barges and offloaded across this dock. General cargo would arrive at the Valdez City Dock.

The intertidal flats adjacent to the construction dock site are used by juvenile salmonids (mostly pink and chum salmon) as a nearshore rearing area. Siwash Creek, the Loop Road Creek system, and Sewage Lagoon Creek produce tens of thousands of fry annually which feed in this area. Siwash Creek is the most important pink salmon producing stream in Port Valdez (escapement of 46,550 in 1977). The major usage of this intertidal area is early April through mid-June.

The blue mussel (Mytilus edulis) and pink clams (Macoma balthica) are important components of the faunal assemblage. Pink clams are heavily utilized by diving ducks feeding in this area. The greatest concentration of waterfowl is in the late fall and early winter months.

The installation of pilings and riprap along with the filling to form the barge dock will cause increased sedimentation to the existing faunal assemblages in the immediate dock area. However, the area is already influenced by sedimentation from the Lowe River system, and additional deposition will not present an insurmountable problem.

We have no objection to the construction dock providing the following stipulations are satisfied:

(a) The dock will revert to city ownership as described in the Review Draft Final Environmental Impact Statement (EIS), page 109 and the Draft EIS, page 39.
(b) Dredge work shall not occur between 7 April and 7 June and shall be limited to a clam shell operation as described in the Review Draft Final EIS, pages 45 and 143.

(c) All dredged material not suitable for fill will be placed in the appropriate upland location (Alyeska mobilization yard) as described in the Review Draft Final EIS, pages 45 and 143.

(2) Control Levee - A flood control levee is to be constructed along the west side of the plant site. This levee will reduce the possibility of flood waters from Valdez Glacier Stream entering the refinery complex. The levee will consist of a 200,000 cubic yard earth embankment stabilized with 40,000 cubic yards of riprap. Material for the fill will come from the refinery site and commercial sources. The embankment will be nine feet high, a minimum of 15 feet wide at the top (of which three to four feet will be class III riprap), and will have a west facing slope of 1½:1.

We have no objection to construction of the control levee as described.

(3) Stream Diversion - A modification to the hydrologic system is proposed which would divert Slater Creek, which now meanders through the proposed site and drains into Corbin Creek (Glacier), into Valdez Glacier Stream through an abandoned and vegetated braided channel. This diversion would result in a loss of 100-250 cubic feet per second (cfs) of flow in Corbin Creek (Glacier) during the period of June through September. This would reduce the flood flow of Corbin Creek (Glacier) by 35 percent during the high flow season.

No significant fish and wildlife resources are associated with either Slater or Corbin Creek (Glacier), therefore, we have no objection to the proposed Slater Creek diversion.

(4) Bridge and Access Road - The proposed primary access route will use the existing city-owned Glacier Stream Haul Road. A 2,000-foot connecting road would be needed from the Haul Road to the site, including a bridge across the main channels of Valdez Glacier Stream. The bridge will be a pile-supported steel and concrete structure consisting of three spans. Each span will be approximately 60 feet in length with the overall length at a minimum of 180 feet.

We have no objection to the bridge and access road across Valdez Glacier Stream.

(5) Secondary Access Roadway - A paved roadway will be constructed across the Robe River, Corbin Creek (Robe), Corbin Creek (Glacier), and related tributaries. Stream crossings will be concrete bridges with surfaced gravel approaches or gravel covered culverts. The access road will be 24 feet wide within a 100-foot wide corridor.

Localized increases in suspended sediment concentration and turbidity could occur at all stream crossings. The crossing of Corbin Creek (Robe) would be the most sensitive crossing. Coho salmon spawning and egg incubation is most sensitive during the period of late August through mid-May.

▼ We are proposing a realignment of the pipeline bundle and associated access road (see item (6)). If ALPETCO determines that this route is not feasible for the secondary access route, and can provide documented evidence to support their position, C1 we will not object to a secondary access road along the designated route providing that pertinent mitigation measures are implemented as described in the Review Draft Final EIS, pages 42-45, or elsewhere in the document. The following ▲ stipulations must be satisfied:

▼ (a) Crossing of anadromous fish streams will be by single C2 span concrete bridges (as described in the Review Draft ▲ Final EIS, page 149(R-2).

▼ (b) Bridge construction shall be limited to the period June 1 C3 to July 15 (as described in the Review Draft Final EIS, ▲ page 150 (c-4)).

▼ (c) Once the refinery construction is completed, the access C4 road will be used only as an emergency route. ▲

(6) Pipeline Route - Crude, product, and ballast water pipeline crossings will be made across the Lowe River, Robe River, Corbin Creek (Robe), Corbin Creek (Glacier) and related tributaries, and Ambercrombie Creek. There would be ten products pipelines and one crude supply line which would be constructed above ground from the refinery site to the Dayville Road/Richardson Highway connection, then buried along the Dayville Road right-of-way to within 1 1/3 miles of the products dock. From this point, the pipeline would again be above ground. Above ground portions would be constructed on a two-level structure. The pipeline rights-of-way, to be acquired by lease from the State of Alaska, would be 300 feet wide except for a 1 1/3 mile stretch immediately west of the Lowe River Bridge which would use the southern 70 feet of the Dayville Road right-of-way. The pipeline corridor immediately adjacent to the Robe River residential subdivision would be 950 feet wide and 400 feet wide from there to the site. Total length of the proposed route is approximately 5 1/3 miles.

The Robe Lake system, which includes Corbin Creek (Robe), Brownie Creek, and the Robe River provides critical spawning and rearing habitat for salmon, particularly coho and sockeye salmon, that contribute to the sport and commercial marine fishery. Corbin Creek (Robe), which passes directly through

C5

ALPETCO's preferred pipeline corridor, supports the greatest number of coho salmon spawners (4840 coho salmon in 1978) of any Port Valdez drainage. Brownie Creek, with its headwaters immediately adjacent to the pipeline route, supports up to 9,200 spawning sockeye salmon per year, and serves as a rearing area for sockeye and coho salmon. The Robe River serves as a migratory corridor for coho and sockeye salmon enroute to Robe Lake and its tributaries, provides spawning habitat for pink (15,000 pink salmon in 1973) and chum salmon, and provides rearing habitat for coho and sockeye salmon. The three major streams within this system also sustain populations of Dolly Varden which currently provide a sport fishery. The four Pacific salmon species that occur within the proposed development area are all of special concern because of their value to the sport fishery and commercial fishery of Prince William Sound, and ecological importance to brown bear in the area. Coho salmon, the most important sport fish species, are the most vulnerable because of the limited spawning and rearing habitat.

The Alaska Department of Fish and Game has identified the Corbin Creek (Robe) and Brownie Creek system as "an exceptionally important salmon spawning drainage" (Draft EIS Appendix I, page I-184). Eighty percent of the coho salmon spawning within the Robe Lake system occurs in Corbin Creek (Robe). Table I, page I-271 of the Draft EIS Appendix I shows actual counts covering the last few years.

Nesting habitat for waterfowl is scarce in Port Valdez. The largest area is the freshwater marsh at Robe Lake. The northwest boundary of Robe Lake has been designated as a "sensitive habitat area" (Dames and Moore, in The Birds of Port Valdez, Sept. 1979). This marsh area provides valuable nesting habitat for dabbling ducks and shorebirds. The "Annotated List of Birds," page I-245 of the Draft EIS Appendix I lists those species utilizing this area.

The entire lengths of Corbin Creek (Robe) and Brownie Creek are designated as "critical habitat" for black and brown bear (Dames and Moore, in The Mammals of Port Valdez, Sept. 1979). The area north of Robe Lake, to the refinery site, and west to the subdivision is considered important habitat for black bear and other mammals. The ALPETCO proposed pipeline route would pass through both of these designated types of habitat. In fact, the area considered important to these species extends into the southern and eastern portion of the site.

Severe loss of aquatic life would be unavoidable in the event of a pipeline rupture that introduced substantial quantities of petroleum products into surface waters and/or the groundwater system feeding Robe Lake and its tributaries (Corbin Creek (Robe) and Brownie Creek). The high permeability of the surface materials makes it imperative that spills of product fuels or toxic substances be prevented. Some of the refined products are highly toxic to aquatic organisms, especially salmonid fishes. The most sensitive spill area would be near Corbin Creek (Robe) since spilled substances would pass through the entire Robe Lake system.

C6 Contamination of surface waters and the groundwater system would not only impact the salmon fishery and waterfowl usage of Robe Lake but would seriously degrade the water quality of the Robe River residential subdivision. The porous nature of the surface materials found over the majority of the site area causes the unconfined aquifer to be vulnerable to contamination by spills of petrochemical products. This unconfined aquifer is the main source of groundwater used by the subdivision as well as feeding the headwaters of Corbin Creek (Robe) and Brownie Creek. The degree of hazard from this contamination source would be highest for products such as gasoline, naptha, toluene, xylene, etc., which would dissipate from the ground. The light fuel oils, in an underground situation, would persist almost indefinitely and are of a sufficiently light viscosity to soak into the permeable gravels to great depths before cleanup could be effected.

C7 If final design studies confirm a potential for liquefaction in the southern and eastern portions of the site, the products pipelines probably would present the greatest risk to the environment. The northern section of ALPETCO's proposed pipeline route now passes through an area potentially prone to liquefaction. Field data indicates that the subsurface formation may be loose and that the water table is quite shallow (less than five feet). This suggests that strong seismic activity may cause liquefaction and subsidence within this area. Ground stretching also appears to be a potential hazard to the pipeline corridor.

C8

Due to the aforementioned concerns, we are suggesting an alternative alignment which we consider to be less environmentally damaging (see attached map). With our proposed alignment, the pipeline would leave the Dayville Road right-of-way approximately 2,000 feet south of the Richardson Highway and would run parallel to the Richardson Highway for approximately 3,500 feet. The pipeline would then turn north at an

angle of about 45° (for a perpendicular crossing of the Robe River) for a distance of approximately 2,000 feet to the Richardson Highway. The pipeline would again turn north at an angle of about 45°, cross under the Richardson Highway, and continue to the base of Knife Ridge. A 25° turn to the east would enable the pipeline to cross Knife Ridge at an angle perpendicular to the ridge. This area appears to offer the most gradual assent and descent of the ridge. The pipeline would then cross Corbin Creek (Glacier) and run somewhat parallel to the west side of Corbin Creek (Glacier) into the proposed site. An access road would parallel the route. This road would be used for maintenance and surveillance of the pipeline.

We believe this route to be more environmentally acceptable for the following reasons:

▼ (a) Our proposed route would avoid the major critical spawning and rearing habitats associated with Robe Lake and its tributaries (Draft EIS Appendix I, page I-282). This route would bypass the entire Robe Lake system except for the crossing of Robe River near its mouth.

C9 (b) There would be one less anadromous fish stream crossing. The only crossings after the Dayville Road cutoff would be the Robe River and Corbin Creek (Glacier). Both crossings would be at locations offering less potential impact to fish and wildlife habitat and the groundwater system. With this route, Corbin Creek (Robe) would not be crossed.

▲ (c) The pipeline route would avoid the sensitive mammal and waterfowl habitat associated with the Robe Lake system (Draft EIS Appendix I, pages I-242 and I-388).

▼ C10 ▲ (d) Our proposed route would cross less wetlands areas. The only wetlands affected would be those associated with the Robe River and Corbin Creek (Glacier) crossings (Draft EIS, page 151 and Appendix I, page I-404).

▼ C11 ▲ (e) Our proposed pipeline route would cross less area possibly prone to liquefaction (as indicated by areas of possible loose sands)(Draft EIS, page 109 and Appendix I, page I-89).

▼ C12 ▲ (f) Our alternative would avoid crossing any areas with known potential for ground stretching with the occurrence of a major seismic event (Draft EIS Appendix I, page I-60).

The Draft EIS also indicates that no gross tectonic deformation occurred in the site area as a result of the 1964 earthquake and that no active or inactive faults are known to exist within a ten-mile radius of the site (Draft EIS, page 112). No major landslides or rockfalls have been associated with seismic activity in the Valdez region. The natural rock slopes within the site should remain stable during expected ground shaking in this area. This should pose no problem for the pipeline over Knife Ridge. The 1964 seismic event was unique in that it was extremely violent and of unusually long duration. These two factors may have resulted in the reported ground failures (Draft EIS Appendix I, page I-59). There was some ground stretching southwest of Knife Ridge along the existing levee (ALPETCO's alternate route). Our proposed route would be approximately 3,000 feet east of this area.

C13 (g) The route would be approximately the same length as the ALPETCO preferred route.

C14 (h) Our suggested route would offer increased protection of the groundwater system for the existing and proposed residential subdivision.

C15 (i) The existing land use is currently designated as "open space" (Draft EIS, pages 168 and 171). North of the Richardson Highway the pipeline would cross existing or proposed city-owned lands. South of the highway the pipeline would cross city-owned and possibly state-owned lands.

C16 (j) South of the Richardson Highway the pipeline route would be entirely within the area currently zoned for "industrial use" (Draft EIS Appendix II, page II-108).

C17 (k) Our proposed route north of the Richardson Highway will only cross and area projected for industrial use (Draft EIS, page 245).

C18 (l) The route will avoid using corridors of the Department of Transportation and Copper Valley Electric Association rights-of-way along the Richardson Highway.

C19 (m) The pipeline would be removed from the Robe River residential subdivision and the proposed extension of this subdivision to the north (Draft EIS, page 139 and 168). This would reduce construction noise adjacent to the residential area and reduces the possibility of exposure to residential activity.

C20 (n) The pipeline could be either above ground or buried, except for the crossing of the Robe River which would have to be elevated.

(7) Wastewater Outfall Pipe - A wastewater outfall pipe will extend from the ALPETCO site across Valdez Glacier Stream to discharge from the north shore of Port Valdez. The pipe line will be 24 inches in diameter and will be buried along its entire length. The pipeline will extend 1,200 feet out from mean lower low water (MLLW) to a depth of 180 feet.

C21 We have no objection to the location of the wastewater outfall pipe. However, we do suggest that the buried portion of this line be extended to -5.0 feet MLLW to avoid exposure at lower tide levels. This suggestion is in support of the National Marine Fisheries Service's recommendation to you on January 25, 1980.

C22 With the exception of the proposed pipeline bundle alignment and associated access road, we believe the construction activities proposed will have minor adverse environmental effects providing our recommended stipulations are followed. We have discussed our pipeline alignment with the permit applicant (through DOWL Engineers, acting as consultants to ALPETCO). Mr. John Paulson (Chief Engineering Consultant) is looking into our proposal. Because the direct and potential environmental impacts of our recommended pipeline alignment would be less than that proposed by the applicant, we object to the issuance of this permit as described in the Public Notice. If the applicant revises the plan to include an alternative without the environmental impacts associated with the presently selected route, we will reconsider our position.

Sincerely,

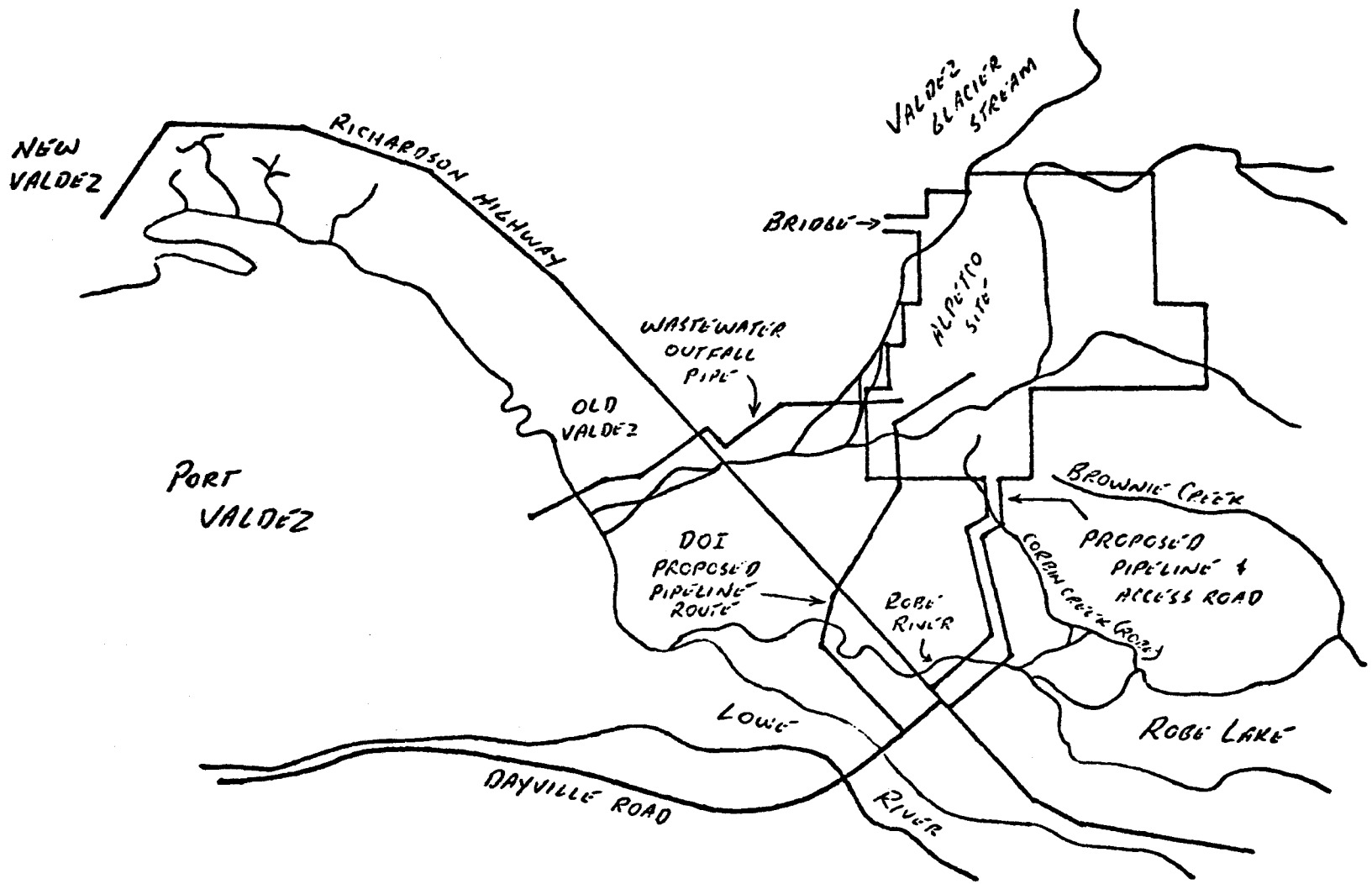
Area Director

Attachment

cc: AOES, WAES

DEPARTMENT OF INTERIOR

PROPOSED PIPELINE ROUTE



RESPONSE TO COMMENTS BY THE
U.S. DEPARTMENT OF THE INTERIOR, FISH & WILDLIFE SERVICE

The preceeding letter by the U.S. Fish & Wildlife Service is in reply to the Corps of Engineers Section 404 Permit public notice. There are several facets to the 404 permit on which FWS has provided a reply of "no objection." These items will not be repeated; the responses that follow address only those items that raise specific questions or warrant further discussion. The only items receiving substantive comment in the FWS letter concern the location of the pipeline route from the Richardson Highway into the site, and its adjoining secondary access road. Consequently, the comments which are paraphrased below, and their responses, address mainly these two issues.

C1 We are proposing a realignment of the pipeline bundle and associated access road. It Alpetco determines that this route is not feasible for the secondary access route, and can provide documentation to support their position, we will not object to a secondary access road along the designated route, providing that pertinent mitigation measures are implemented.

R1 Physical alterations to Knife Ridge that would be necessary to construct a useable access road along the suggested route preclude this route from being a feasible alternative to the preferred secondary access road route. In addition, the City of Valdez has stated that a roadway or pipeline crossing of city-owned land west of Robe River Subdivision would not be compatible with the city's intended use of this area, and would not be allowed. The city also voiced objections to a major surface alteration of Knife Ridge for aesthetic and noise control reasons (See City of Valdez letter, p. 281).

The natural ground surface of Knife Ridge at the lowest point in elevation rises from 50 ft at the base of the hill to 228 ft at the top, a rise of about 35 percent or about 2.9 ft horizontal to 1 ft vertical. At the highest point of the hill, the rise is about 47 percent, or 2.1 ft horizontal to 1 ft vertical. Two factors governing the design of a roadway are to maintain a grade which allows for physical access during slippery winter

to maintain a grade which allows for physical access during slippery winter conditions, limited to about 10 percent maximum, and to maintain a grade which allows safe site distance, which would be expected to be less than 10 percent. Therefore, to cross the ridge at its lowest point and maintain a maximum grade of 10 percent, the peak roadway elevation would be limited to 102 ft, compared to the natural elevation of 228 ft. This would require a cut approximately 126 ft deep. To allow for roadway at the bottom, and properly cut slopes, the cut would have to be 450 ft wide at the top of Knife Ridge. To include the pipeline bundle, or cross at any but the lowest point, the depth and width of the cut would increase. Creation of such an eyesore at the entry to the city is among the objections of the City of Valdez. Additionally, an access road in a less obtrusive area would be more easily restricted from use.

C2 Regarding the route of the preferred secondary access road, crossing of anadromous fish streams would be by single span concrete bridges.

R2 This stipulation has been made. See Section IV, p. 253, item R2.

C3 Regarding the preferred route of the secondary access road, bridge construction shall be limited to the period June 1 to July 15 (as described in a review draft of the FEIS which was made available to the agencies for comment prior to publication of the FEIS).

R3 The statement, which appears in FEIS Section II, p. 47, item C3, states that all in-water product pipeline construction shall occur from June 1 to July 15 of each year, with the exception of the Lowe River within which work will occur from March 1 to June 15. This restriction applies to construction activities that will take place in the streams. A single-span bridge deck, for example, could be placed outside this time span, provided there is no in-stream work. This restriction does not apply to any part of bridge construction that is not performed in the stream or that does not directly affect the natural stream flow.

C4 Regarding the preferred route for the secondary access road, once the

R4 The secondary access road would be restricted from general public access and would serve only as an emergency route and for pipeline surveillance access by company officials (see Section II, p. 15).

C5 Alpetco's preferred pipeline corridor supports the greatest number of coho salmon spawners (4,840 coho salmon in 1978) of any Port Valdez drainage. Brownie Creek, with its headwaters immediately adjacent to the pipeline route, supports up to 9,200 spawning sockeye salmon per year and serves as a rearing area for sockeye and coho salmon.

C5 For clarification, Corbin Creek (Robe) which crosses the preferred pipeline corridor currently (1978-1979) supports the greatest number of coho salmon spawners of any Port Valdez drainage. Per Alaska Department of Fish & Game information, during the years 1975 through 1977 the Lowe River system and Robe Lake system produced nearly equivalent numbers of coho salmon. Brownie Creek is located adjacent to the preferred pipeline route at a distance of approximately 900 ft from the proposed pipeline alignment.

C6 First two paragraphs on p. 6 of the comment letter regarding possible occurrence of pipeline spills of substantial quantities and the consequences.

R6 Refer to FEIS Section II, p. 14, for the discussion on probability of spills, and specific spill avoidance precautions. This comment discusses the severe losses that would be experienced in the event substantial quantities of petroleum products spilled into the surface waters and/or the groundwater systems feeding Robe Lake and its tributaries. Although the term substantial quantities is a relative term which has not been quantified, the available information indicates that the probability of a large spill has been reduced to an acceptable level. In addition, various mitigation items are directed toward early detection and minimization of any spill that could occur from the remaining risk. The prediction of the consequences of a spill should focus on the expected spill magnitude as well as the catastrophic scenario. As a final mitigation measure, Alpetco has agreed to assist the Alaska Department of Fish and Game and/or Valdez Fisheries Development Association in establishing an alternate coho fishery in the eastern Port Valdez area.

sequences of a spill should focus on the expected spill magnitude as well as the catastrophic scenario. As a final mitigation measure, Alpetco has agreed to assist the Alaska Department of Fish and Game and/or Valdez Fisheries Development Association in establishing an alternate coho fishery in the eastern Port Valdez area.

C7 If final design studies confirm a potential for liquefaction in the eastern and southern portions of the site, the products pipeline probably would present the greatest risk to the environment.

R7 For further information, see FEIS Section III, p. 129, items C17 and R17. The referenced statement concludes that if the area is determined to be sufficiently susceptible to liquefaction, safe construction is not precluded but rather subjected to more restrictive design standards.

C8 Ground stretching also appears to be a potential hazard to the preferred pipeline corridor.

R8 This is not correct. There is no known information documenting any ground stretching (cracks in the earth due to strong seismic events) in the area of the preferred pipeline corridor.

Note: At this point in the comment letter, the Fish and Wildlife Service suggests a third alternate route for the pipeline system and presents an outline of comments and discussions concerning the route. The comments and responses that follow concern the FWS discussions on the third alternate pipeline route. The location of this route is described in the comment letter on the bottom of p. 6 and top of p. 7, and is shown in a diagram at the conclusion of the letter.

This alternate suggested pipeline route was first proposed by Fish & Wildlife Service in a conference on March 21, 1980 and appeared as a formal proposal in the April 1, 1980 comment letter to the Corps of Engineers on the Section 404 Permit Public Notice. During consideration of alternate pipeline routes, the general FWS suggested route was eliminated from consideration for reasons contained in the following responses. In reviewing preliminary text material being

prepared for the Final EIS, FWS stated that Alpetco has determined that the alternate pipeline route which was described in the DEIS is not acceptable; therefore, no viable alternative was presented for public and agency review. Therefore, FWS presented the suggested route described in their comments. This has been misunderstood and is not the case. Alpetco has not made any determinations or decisions regarding the alternate pipeline route since the DEIS was released. The DEIS alternate pipeline route does remain an alternative in this project; however, it is not considered the preferred route for the reasons described in Final EIS, Section II, p. 13-16. Although a description of this third alternative route was received late, the responses below are intended to be sufficiently detailed to describe why, with consideration to all factors involved, a route in this location was not considered an alternative previously and is inferior to the preferred pipeline corridor.

C9 Paragraphs (a), (b), & (c) on p. 7 of the comment letter.

R9 The FWS-proposed pipeline route would avoid the entire Robe Lake system as indicated in the comments. However, this applies only to the pipeline system but not necessarily to the secondary access road. All indications are that the secondary access road could still be located in the proposed corridor from the Richardson Highway to the plant site. The net increase of habitat lost with the route suggested by the FWS would be greater than with the preferred corridor. The suggested pipeline route would still require an adjoining access road for pipeline surveillance purposes. This would preclude the preferred secondary access road serving a dual purpose (emergency access and pipeline surveillance) and would result in a net increase of disturbed land for these facilities.

C10 The FWS-proposed route would cross less wetland areas. The only wetlands affected would be those associated with the Robe River and Corbin Creek (Glacier) crossings.

R10 This route would cross less wetland areas.

C11 The FWS-suggested route would cross less area possibly prone to liquefaction (as indicated by areas of possible loose sands).

R11 As discussed in R7 above, this is not really an issue. Any subsequent determination that the preferred route is prone to liquefaction would only define safe design and construction techniques, and would not necessarily imply any greater environmental risks.

C12 The FWS-suggested route would avoid crossing any areas with known potential ground stretching with the occurrence of a major seismic event.

R12 This is not correct. The FWS-suggested route would pass within 900 feet of the location of the largest individual longitudinal fissures produced in the Valdez area during the 1964 earthquake. This is about the same distance as the alternate pipeline route #2 identified in the EIS was from the fissure segments, and this was of considerable concern to the viability of that route. See also item R8 above and Section II, p. 16.

C13 The FWS-suggested route would be approximately the same length as the preferred route.

R13 This is true, the routes would be roughly equivalent in length.

C14 The FWS-suggested route would offer increased protection of the groundwater system for the existing and proposed residential subdivision.

R14 Both routes have pipelines within 1,000 feet of the subdivision; therefore, on the basis of proximity, the subdivision groundwater system would be equally vulnerable to each route. The FWS route has a greater length of pipe located a greater distance from the subdivision than the preferred route and on this basis part of the system would present less risk to the groundwater system.

C15 Existing land use in the area of the FWS-suggested route is currently designated as "open space." North of the Richardson Highway, the pipeline would cross existing or proposed city-owned lands. South of the highway, the pipeline would cross city-owned, and possibly state-owned lands.

R15 The proposed Valdez zoning ordinance, recently published, will update existing land use designations. The area south of the Richardson Highway would be zoned P (Public Interest Lands District) which is intended to be lands containing major open space areas, watershed areas and major public and quasi-public recreation, education and institution uses, including private lands and uses that are essentially public in character and of specific value to the entire community. There is a 500 ft wide buffer strip around the northwest and northeast sides of Robe River Subdivision that would also be zoned P. The other parcel applicable to this discussion is the city-owned property west and north of Robe River Subdivision which would be zoned HI (Heavy Industrial District).

C16 South of the Richardson Highway, the FWS-suggested pipeline route would be entirely within the area currently zoned for "industrial use."

R16 As mentioned in R15 above, this area is now proposed for P zoning.

C17 The FWS-proposed route north of the Richardson Highway will only cross an area projected for industrial use.

R17 The City of Valdez has stated that a pipeline system or access road would not be compatible with their intended use of this HI zoned parcel west of Robe River Subdivision. In addition, the city is concerned that the pipeline construction over Knife Ridge would create an unacceptable eyesore. For this reason, the City of Valdez has stated that this land shall not be considered available for a pipeline route and should be excluded from further consideration. See City of Valdez letter, p. 281.

C18 The FWS-suggested route would avoid using corridors in the Department of Transportation and Copper Valley Electric Association rights-of-way along the Richardson Highway.

R18 True, this route would avoid these corridors.

C19 The FWS-suggested route would be removed from the Robe River residential subdivision and the proposed extension of this subdivision to the north.

This would reduce construction noise adjacent to the residential area and would reduce the possibility of exposure to residential activity.

R19 The preferred route and the FWS-suggested route are nearly equidistant from the existing subdivision boundaries; however, the presently developed portions of the subdivision are closest to the preferred route. Over the long term, it would have to be assumed that the subdivision would become fully developed and that the possibility of exposure to residential activity would be equal between the two routes. The construction activities would be of short duration and all of the developed subdivision areas are located closer to the preferred route. The short-term impacts from construction are not expected to be significant. From a noise standpoint, operating heavy equipment on an elevated location such as Knife Ridge could have the most significant short-term effects. The new proposed Valdez zoning ordinance classifies the land north of Robe River Subdivision as either P (Public Interest Lands) or HI (Heavy Industrial District) which would preclude extension of the subdivision to the north.

C20 Along the FWS-suggested route, the pipeline could be above ground or buried, except for the crossing of the Robe River which would have to be elevated.

R20 Comment so noted.

C21 Regarding the wastewater outfall pipe, we have no objection to the location; however, we do suggest that the buried portion of this line be extended to -5.0 ft. MLLW to avoid exposure at lower tide levels. This suggestion is in support of the National Marine Fisheries Service recommendation to you on January 25, 1980.

R21 This will be done. See Section III, p. 254.

C22 Reference the last paragraph in the Fish and Wildlife Service comment letter.

R22 It should be clarified that Fish & Wildlife Service discussed their pipeline alignment with CCC/HOK-DOWL, which is acting as EPA's consultant for preparation of the Environmental Impact Statement. CCC/HOK-DOWL was not acting as a consultant to Alpetco as stated in the comment letter. With reference to the suggested FWS pipeline alignment alternative, CCC/HOK-DOWL was looking into this proposal on behalf of EPA.

City of Valdez
Inc. 1901

OFFICE OF ADMINISTRATION
April 7, 1980

RECEIVED 4/9/80

Mr. John E. Paulson, Project Manager
CCC/HOK-DOWL
4040 "B" Street
Anchorage, Alaska 99503

Dear Mr. Paulson:

The City of Valdez Planning Department has reviewed the pipeline route discussed in your March 14, 1980 letter and we offer the following comments.

The City does own the tract west of Robe River Subdivision from the Richardson Highway north across Knife Ridge into and including the proposed Alpetco plant site. We would not agree with use of any portion of the property east of Robe River Subdivision for a pipeline crossing. This is approximately two hundred acres of developable highway frontage land that the City considers important to the industrial park currently being formulated in this general area. We would not want to encumber any part of this property with a pipeline system. The City views either of the other two alternatives far more viable from a land-use standpoint.

In addition, the City would strongly oppose any large-scale alteration of Knife Ridge which appears would be required by construction activities over the ridge. Aesthetically, the City views Knife Ridge as one of the natural features that will visually screen the Alpetco plant from Richardson Highway viewpoints and we don't want the ridge to become an eyesore by destruction of the natural features. Also, we consider Knife Ridge as a valuable sound barrier between Robe River Subdivision and the plant site and any alteration of it will render it less effective for this purpose. Particularly from a visual standpoint we would not agree with crossing Knife Ridge with the pipeline system or access road.

The City of Valdez does not consider this pipeline route a viable alternative and we recommend it be excluded from further consideration in the development of this project.

Sincerely,
CITY OF VALDEZ, ALASKA

Mark Lewis
City Manager

P. O. BOX 307 . . . VALDEZ, ALASKA 99686 . . . TELEPHONE (907) 835-4313
cc: Deborah Kirk - EPA
Ron Dagon - The Alpetco Company

U.S. ENVIRONMENTAL PROTECTION AGENCY

ALASKA OPERATIONS OFFICE
Room E535, Federal Building
701 C Street
Anchorage, Alaska 99501

March 26, 1980

REPLY TO
ATTN OF:

David L. Robbins, Chief
Construction/Operations Division
Alaska District, C/E
P. O. Box 7002
Anchorage, Alaska 99510

Re: 071-0YD-2-790373 Port Valdez 85

Dear Mr. Robbins:

The Alaska Operations Office has received the above referenced permit application to construct a refinery and petrochemical supporting facilities at Valdez.

We have no objection to the issuance of this permit provided the applicant complies with Alaska Department of Fish and Game conditions that may be needed to protect the aquatic resources.

Sincerely,

William Lawrence

William Lawrence
Dredge and Fill Permit Coordinator

cc: USFWS, Anchorage
NMFS, Anchorage
ADFG, Anchorage
ADEC, Anchorage
Applicant

U.S. ENVIRONMENTAL PROTECTION AGENCY

ALASKA OPERATIONS OFFICE
Room E535, Federal Building
701 C Street
Anchorage, Alaska 99501

19 FEB 1980

REPLY TO
ATTN OF:

David L. Robbins, Chief
Construction/Operations Division
Alaska District, C/E
P. O. Box 7002
Anchorage, Alaska 99510

Re: 071-OYD-2-790372 Port Valdez 84

Dear Mr. Robbins:

We have reviewed the above referenced permit application to construct a tanker terminal in an area adjacent to the Dayville Road in Port Valdez near the City of Valdez.

Our Agency will have no objection to the issuance of this permit provided the applicant complies with all State and Federal resource agency conditions that may be needed to protect the aquatic resources.

Sincerely,

William Lawrence

William Lawrence
Dredge and Fill Permit Coordinator

cc: USFWS, Anchorage
NMFS, Anchorage
ADFG, Anchorage
ADEC, Anchorage
Applicant

STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, as required by Section 401 of the Clean Water Act, has been requested by the Alaska Petrochemical Company, an Alaskan Corporation, 601 W 5th Avenue, Suite 320, Anchorage, Alaska 99501, for the construction of a temporary construction dock, a control levee, diversion ditches, bridge crossings, pipeline crossings and installation of a wastewater outfall pipe from the facility.

The proposed activity is located in numerous Sections of T9S R6W R5W; and T8S R6W, R5W, Valdez quads, A-6, A-7, at the eastern end of Port Valdez.

Public notice of the application for this certification has been made in accordance with 18 AAC 15.180.

Water Quality Certification under Section 401 of the CWA is required for the proposed activity because the activity will be permitted by a Department of the Army permit identified as NPACO 071-OYD-2-790373, Port Valdez 85, and a discharge may result from the proposed activity.

Having reviewed the application and comments received in response to the public notice, the Alaska Department of Environmental Conservation certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, is in compliance with the requirements of Section 401 of the Clean Water Act which includes the Alaska Water Quality Standards, 18 AAC 70, and the Standards of the Alaska Coastal Management Program, 6 AAC 80, provided that the following conditions are included:

1. The pipeline shall be above ground throughout the Corbin Creek (Robe) drainage with shut off valves at the Corbin Creek and Robe River crossings.

2. The pipelines shall be elevated across Corbin Creek (Robe) and Robe River.

3. Once the facility is constructed, the Corbin Creek (Robe) access road shall be used only for pipeline maintenance and inspection purpose

4. Dredge work in the area of the temporary dock shall not occur between 7 April and 7 June. Dredging shall be limited to a clam shell operation.

5. Inwater work in Abercrombie Creek shall occur only between 1 June and 15 July. For the Lowe River, inwater work shall occur between 1 March and 15 June.

March 28, 1980
Date

C. Deming Cowles

C. Deming Cowles
Deputy Commissioner

STATE OF ALASKA

JAY S. HAMMOND, Governor

OFFICE OF THE GOVERNOR

DIVISION OF POLICY DEVELOPMENT AND PLANNING

POUCH AD
JUNEAU, ALASKA 99811
PHONE: 465-3512

April 3, 1980

Mr. James Caruth
U.S. Army Corps of Engineers
Regulatory Functions Branch
P.O. Box 7002
Anchorage, Alaska 99510

Subject: Valdez Oil & Gas Refinery & Facilities Permit
State I.D. No. FD230-79102303FP, COE #071-0YD-2-790373

Dear Mr. Caruth:

It is our understanding that the following 6 stipulations have been agreed to by the applicant, Alpetco, concerning the subject project's Alaska Coastal Management Program (ACMP) consistency review:

1. The pipeline shall be above the ground throughout the Corbin Creek (Robe) drainage with shut off valves at the Corbin Creek and Robe River crossing. 6 AAC 80.130(c)(7).

2. The pipelines shall be elevated across Corbin Creek (Robe) and Robe River. 6 AAC 80.130(c)(7).

3. Once the facility is constructed, the Corbin Creek (Robe) access road shall be used only for pipeline maintenance and inspection purposes. 6 AAC 80.130(c)(7).

4. Alpetco shall establish within the Port Valdez area, an alternate coho salmon run of value not less than the Corbin Creek (Robe) run. This establishment will be in conjunction with activities of the Alaska Department of Fish and Game and/or Valdez Fisheries Development Association. This run should be established within thirty-six (36) months after commencement of plant operation. 6 AAC 80.130(c)(7).

5. Dredge work in the area of the temporary dock shall not occur between April 7 and June 7 with all dredge work limited to a clam shell operation.

6. Inwater work in Abercrombie Creek is limited to the period between June 1 and July 15, while inwater work in the Lowe River is to be limited to the period between March 1 and June 15.

Since these stipulations have been accepted by the applicant, the Division of Policy Development and Planning, in accordance with Public Law 92-583

and 94-370 and Alaska Statutes 46.40.010, has completed review of the consistency of the subject proposal with the Alaska Coastal Management Program.

As currently modified by these stipulations, we concur that the proposal is consistent with ACMP.

However, if the project is substantially amended during its implementation such that it affects the coastal zone differently than as represented in the proposal we reviewed, we ask that you contact the State Clearinghouse to determine if an ACMP review of the revision is required.

Sincerely,

Frances A. Ulmer
Director

cc: Alpetco
Tom Barnes, Office of Coastal Management
Department of Fish and Game
Department of Natural Resources
Department of Community & Regional Affairs
Department of Environmental Conservation
Department of Transportation & Public Facilities
Department of Commerce and Economic Development
Environmental Protection Agency

STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, as required by Section 401 of the Clean Water Act, has been requested by the Alaska Petrochemical Company, an Alaskan Corporation, 601 W 5th Avenue, Suite 320, Anchorage, Alaska 99501, for the construction of a tanker terminal, including loading platforms, a product and ballast pipeline network, mooring dolphins and a trestle.

The proposed activity is located near Allison Creek on the southeastern portion of Port Valdez.

Public notice of the application for this certification has been made in accordance with 18 AAC 15.180.

Water Quality Certification under Section 401 of the CWA is required for the proposed activity because the activity will be permitted by a Department of the Army permit identified as NPACO 071-OYD-2-790372, Port Valdez 84, and a discharge may result from the proposed activity.

Having reviewed the application, and comments received in response to the public notice, the Alaska Department of Environmental Conservation certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, is in compliance with the requirements of Section 401 of the Clean Water Act which includes the Alaska Water Quality Standards, 18 AAC 70, and the Standards of the Alaska Coastal Management Program, 6 AAC 80.

March 28, 1980
Date

C. Deming Cowles
C. Deming Cowles
Deputy Commissioner

STATE OF ALASKA

JAY S. HAMMOND, Governor

OFFICE OF THE GOVERNOR

DIVISION OF POLICY DEVELOPMENT AND PLANNING

Phone 465-3512
Pouch AD - Juneau 99811

April 3, 1980

Mr. Jim Caruth
U.S. Army Corps of Engineers
Regulatory Functions Branch
P.O. Box 7002
Anchorage, Alaska 99510

Subject: Valdez Oil & Gas Terminal COE Permit
State I.D. No. FD230-79110703FP, COE #071-0YD-2-790372

Dear Mr. Caruth:

The Division of Policy Development and Planning, in accordance with Public Law 92-583 and 94-370 and Alaska Statutes 46.40.010, has completed review of the consistency of the subject proposal with the Alaska Coastal Management Program (ACMP).

As currently planned, we concur that the proposal is consistent with ACMP.

However, if the project is substantially amended during its implementation such that it affects the coastal zone differently than as represented in the proposal we reviewed, we ask that you contact the State Clearinghouse to determine if an ACMP review of the revision is required.

Sincerely,

Frances A. Ulmer
Director

cc: Tom Barnes, Office of Coastal Management
Alpetco
Glen Akins, DEC
Rikki Fowler, DEC
Commissioner McAnerney, CRA
Commissioner Webber, CED
Commissioner Ward, DOT/PF
Bob Baldwin, DNR
Bruce Barrett, ADF&G
James Sweeney, EPA

01-A3LH

U.S. DEPARTMENT OF C IMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
701 C St. Box 43
Anchorage, Alaska 99513

Date : JAN 21 1980

Reply to Attn. of:

To : District Engineer
Alaska District, Corps of Engineers

From : Harry L. Rietze
Director, Alaska Region

Subject: NPACO-OP-P Port Valdez 84
NPACO No. 071-OYD-2-790372

Reference is made to your public notice dated October 19, 1979, to construct a tanker terminal in an area adjacent to the Dayville Road in Port Valdez, near the city of Valdez, Alaska.

We have reviewed the above-referenced application and believe the described construction activities could have an adverse impact on the living marine resources located in the vicinity of the proposed construction. We believe the resources will be adequately protected provided the permittee adheres to the standard conditions of the Corps of Engineers' permit and the following stipulation:

1. No in-water construction shall occur between July 15 and August 15, to avoid interference with salmon migrations.

Thank you for the opportunity to comment on this application at this time.

COMMENT NOTED

STATE OF ALASKA
DEPARTMENT OF FISH AND GAME

JAY S. HAMMOND, GOVERNOR

333 RASPBERRY ROAD
ANCHORAGE 99502

January 14, 1980

NPA 2-790372/Port Valdez 84

Department of the Army
Alaska District, Corps of Engineers
Regulatory Functions Branch
P. O. Box 7002
Anchorage, Alaska 99510

Attention: David L. Robbins

Gentlemen:

The Alaska Department of Fish and Game has reviewed the subject proposal by Alpetco to construct a tanker terminal in the Port Valdez area.

We do not foresee any major fisheries or wildlife conflict with the proposal. There will be, however, some indirect problems but not to the extent that warrants discussion in this letter. These points will be covered in our response on the Draft Environmental Impact Statement.

Thank you for the opportunity to comment.

Sincerely,

Ronald O. Skoog, Commissioner

BY: Bruce M. Barrett
Projects Review Coordinator
Habitat Protection Section

cc: R. Morris, NMFS
R. Bowker, USFWS
B. Flint, ADEC
B. Lawrence, EPA
Alpetco

V Public Hearings

PUBLIC HEARINGS

Public hearings on the draft EIS and associated federal permit actions were conducted in Anchorage on January 29, 1980, in Valdez on January 30, 1980 and in Juneau on January 31, 1980. The hearings were widely publicized. The following testimonies by federal agencies were presented at the hearings in Anchorage and Valdez. Due to the very limited attendance at Juneau, the testimonies were incorporated into the record by reference and were made available to the attendees. Attendance numbered 28 in Anchorage, 31 in Valdez and 2 in Juneau.

Because agency testimonies were the same at all three hearings and the only public testimony was that of Valdez Mayor Walker, the transcript of the Valdez hearing only is repeated here. There were no statements or questions by the public in Anchorage. Mayor Walker, City of Valdez, presented a statement at the Valdez hearing. At Juneau, Bob Martin entered into the record the fact that he represented the Alaska Conservation Society and that they had been represented at the hearing.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

FEDERAL PUBLIC HEARING

ON THE

DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

FOR THE ALASKA PETROCHEMICAL COMPANY (ALPETCO)

REFINING AND PETROCHEMICAL FACILITY

TO BE SITED AT VALDEZ, ALASKA

The above-entitled matter came on for hearing, pursuant to notice, at approximately 7:40 p.m. on Wednesday, January 30, 1980 in the City Council Chambers, Valdez, Alaska.

PANEL MEMBERS

RICHARD DU BEY	Hearing Officer Assistant Regional Counsel U.S. Environmental Protection Agency Region 10 1200 Sixth Avenue Seattle, Washington 98101
LLOYD REED	Director of Enforcement Division
DEBORAH KIRK	EPA Project Officer for the DEIS
MIKE JOHNSTON	Chief, EPA's New Source Permits Section
BILL LAMOREAUX	EPA'S Alaska Operations Office 701 C Street Anchorage, Alaska

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Statement - Mayor Bill Walker	35 - 36

C E R T I F I C A T I O N

THIS IS TO CERTIFY:

That the proceedings in the matter of:

PUBLIC HEARING ON THE

DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

FOR THE ALASKA PETROCHEMICAL COMPANY (ALPETCO)

REFINING AND PETROCHEMICAL FACILITY

TO BE SITED AT VALDEZ, ALASKA

were had as herein appears and this is the original verbatim transcript thereof for the files of the Agency.

ALASKA-WIDE COURT REPORTERS

Nancy Wassmar
REPORTER

P R O C E E D I N G S

HEARING OFFICER RICHARD DU BEY, presiding: Good evening. My name is Richard Du Bey, Assistant Regional Counsel of the U.S. Environmental Protection Agency in our Seattle Office and I've been designated by our Regional Administrator as Hearing Officer for the purpose of this hearing.

I'd like to welcome you all here this evening. I realize the subject of the hearing, the ALPETCO refinery and the permits for the ALPETCO refinery, are of interest to you and we hope to share our information with you and receive any information that you may have about the project.

The people who are seated up at the panel, and we don't quite outnumber you although we tried to, are going to be making presentations as a part of this hearing to provide you with information as to what we have done to date regarding the NEPA process and the various permits that are involved in this project. I'd like to just take a moment to introduce everybody. From your left to right, Miss Deborah Kirk, and she's with EPA, she was the Project Officer for the EIS, Environmental Impact Statement, for this project; next is Bill Lamoreaux of the EPA's Alaska Operations Office in Anchorage and he is the person who is responsible for the NPDES water discharge permit for the project; next is Lloyd Reed, he's the special representative of the Regional Administrator, and he's the Director of our Enforcement Division; next is Joyce Bealman with the Alaska Department

of Environmental Quality, she's going to be talking to us a bit about the water quality standards and the State Certification of EPA's water discharge permit; next is Mike Johnston, he's Chief of EPA's Permit Branch in Seattle and he's going to tell you about the PSD, or the Prevention of Significant Deterioration of the air permit which is a part of this project. Next is Captain Mike Mahoney of the Corps of Engineers. The Corps is a cooperating agency with EPA in developing the Environmental Impact Statement and he's going to talk about the Corps' 404 permit and Section 10 permit, which they will be issuing for the project.

For the record, I'd like to note that this combined hearing was convened at 7:40 p.m., January 30, 1980 at the Valdez City Hall, Council Chambers, Valdez, Alaska. The subject of this hearing is going to be the following:

The EPA's Draft Environmental Impact Statement for the project, the Draft, National Pollutant Discharge Elmination System permit, I'll call it the water discharge permit; State Certification regarding water quality standards under Section 401 of the Clean Water Act; the Corps of Engineers dredge and fill permit under Section 404 of the Clean Water Act; and finally EPA's preliminary determination regarding the Prevention of Significant Deterioration air permit under the Clean Air Act.

For the purpose of this combined hearing, what we are going to be doing is reviewing the project as a whole and pro-

viding you with an update of all the information that we have available at this time.

I'd like to make it clear from the beginning that even though there will be a number of people talking, the hearing is being conducted by EPA and I'll be conducting it on behalf of EPA.

As Hearing Officer, I'd like to establish some ground rules as to how we're going to be conducting this evening's hearing and also establish an agenda to let you know how I would like to have the hearing progress this evening.

The public hearing is for the purpose of allowing the citizens to comment on EPA's proposed Draft Environmental Impact Statement and the other permits I have mentioned. All of these permits and the DEIS regard the proposed ALPETCO Refinery and Petrochemical Facility to be sited in Valdez. The Draft Environmental Impact Statement was prepared under the authority of the National Environmental Policy Act which requires federal agencies to prepare the Environmental Impact Statement when they are going to be involved in major actions that signficantly affects the quality of the human environment.

The federal action in this case is the issuance of an NPDES, or water discharge permit to ALPETCO under the Clean Water Act. ALPETCO submitted an application on September 12, 1978 to EPA for a water discharge permit for the proposed refinery and based on a review of information submitted with the

application, EPA determined the facility would be a new source of discharge and would likely have significant impact on the environment and, therefore, prepared an Environmental Impact Statement. At the request of EPA, the Corps of Engineers became a cooperating agency for the purposes of developing the EIS and in the NEPA process.

EPA's alternatives in this case are limited to issuing the NPDES permit, the denying it, or to issuing it with certain conditions. The Draft NPDES permit for this facility contains several conditions which directly are related to the waste water discharge, including a long term monitoring program. Nevertheless, EPA will consider the complete range of environmental impacts in acting on this application and will not make a final decision until the NEPA process, or the National Environmental Policy Act process has been completed. The process involves three stages from this point forward. First, a review by EPA of the comments received on the Draft Environmental Impact Statement, both at this public hearing and the other public hearings we've held, and any write-ins, which you or others wish to sbumit after this hearing tonight. Then we're going to be preparing a final Environmental Impact Statement, which will respond to those comments and finally, a thirty-day comment period following publication of the final Environmental Impact Statement.

For those who wish to testify at this hearing, we've

encouraged participation by providing the Draft Environmental Impact Statement and the Draft NPDES permit, on file in Anchorage, Juneau and Valdez since December 7th, 1979. Copies of EPA's Statement can also be obtained, for those of you who would like to receive one, by writing to our Environmental Evaluation Branch or by asking to have a copy to review at this hearing, several copies are available, is that correct?

MS DEBORAH KIRK: Yes, they might be in Mike's office but they're in town.

MR. DU BEY: The PSD permit application, or the Prevention of Significant Deterioration permit, that's the air permit that's required for this project, has been available in Anchorage, Juneau, Valdez and Fairbanks since December 18th, 1979, and the preliminary determination has been available at the same locations since January 14th, 1980.

Persons who are unable to testify at the hearing this evening, or wish to furnish comments after the hearing, may do so by writing to Miss Deborah Kirk at the Environmental Evaluation Branch at EPA's Regional Headquarters in Seattle. Anyone interested in the address, I'll be glad to furnish it to you either during a break or at the conclusion of the hearing. The deadline for comments on both documents is February 16, 1980. I'd like to mention at this time that we're going to have a question and answer period at the third stage of this hearing and anyone who has a question I'd like them to direct it at me

and I will then assign the proper person to answer the question for you.

Next, I'd like to give you an agenda of how I would like to conduct the hearing. First, we will provide you with some background information from the members of the panel who have been involved since the beginning of the Statement, in developing the EIS from the various comments. Secondly, soliciting comments by those of you here who wish to make them and thirdly, having a question and answer period where it will be rather free-form, if anyone has a question they would like to ask, we'll try to answer it for them.

The various participants I've already introduced to you. If anyone has to leave early, if they can either let me or Deborah Kirk know, we will arrange to have you speak early so you will be able to participate here.

The other thing I'd like to mention is the people who are available to respond to your questions, Mr. John Paulson, who is the consultant to EPA on the Environmental Impact Statement and Mr. Ron Dagon representing ALPETCO are also here this evening, so if you have any questions you would like them to respond to, they are likewise available.

As Hearing Officer, I reserve the right to limit the questioning, call recesses and adjourn and reconvene the hearing. Since this is an informal hearing, there will be no cross-examination. I would ask that presentations be limited to ten

or fifteen minutes. If anyone wants to continue beyond ten or fifteen minutes, you may do so at the end of the hearing so others will have a chance to speak also. If anyone has any written material, and you are under no obligation to prepare any, we'd be glad to receive it and enter it into the record. Written comments will be received after this hearing, as I mentioned before, by February 16th, 1980.

We also anticipate that the final Environmental Impact Statement, which will follow a review of the comments which you provide to us, is going to be released about May of 1980.

The record of this hearing is being made by a court reporter, Ms Nancy Glassman and, therefore, I'd ask you to state your name and address and affiliation, if any, when you come and make your statement so we will be able to have a record reflect your remarks.

We also intend to make the transcript of this hearing this evening available for your review at EPA's Alaska Operations Office in Anchorage and at the Public Libraries in Fairbanks, Juneau and here in Valdez.

Any questions or comments about the procedures? (No response) Okay, well why don't we go right into the background information and I'll ask Deborah Kirk to talk about the Environmental Impact Statement.

MS DEBORAH KIRK: I work for the Environmental Protection Agency in their Seattle Regional office. I am going to present

a brief overview of some of the findings of the EIS that's been prepared during the past year. Since there can be many potential impacts from a proposal of this type, during the process of preparing the EIS, many state, federal and local agencies, as well as the public, helped us to identify and evaluate the potential impacts. The major environmental consideereations that I'm going to summarize, they are by no means all of the ones that we studied, are as follows: site alternatives, geological hazards, solid wastes, biological impacts, spill prevention and control, marine transportation and socio-economic considerations.

ALPETCO carefully studied other potential Alaska sites during the State mandated site selection process before selecting Valdez. Valdez was chosen primarily due to community support, proximity to crude oil supplies and presence of a deep water port. Further, there was no evidence of insurmountable environmental problems and the existing local public services and facilities were thought to be adequate to accommodate the anticipated growth.

In an area which is seismically active, as this area is, extensive soils and seismic studies were a necessity. It has been determined that the affected soils should generally present no construction problems. There is no permafrost in the area and the site has low potential for frost heave. It is going to be necessary to perform a ground motion analysis in designing

the individual components of the facility to allow for seismically induced out of phase motion. Based on the studies undertaken during this past year, there is no evidence that it would be inadvisable or unsafe to build a refinery at this location using known engineering and construction techniques.

Considerable volumes of both hazardous and nonhazardous solid wastes would be generated by this facility. There are no designated treatment or storage sites for hazardous wastes in Alaska. Therefore, all wastes classified as hazardous would be shipped to approved disposal sites in the lower forty-eight. There are existing Federal regulations, primarily Transportation regulations, which govern the safe transport of such materials. In addition, the on-site, short-term storage area can be designed to prevent contamination of land or water resources in the event of a spill. Nonhazardous wastes, such as solid refuese and some of the sludges, would be incinerated on-site with ash disposal in the city landfill. Valdez is currently in the process of upgrading their landfill facilities, with this project in mind, and anticipates no problem accommodating wastes from the proposed facility.

Maintenance of fish spawning areas is the major freshwater concern in this area. There are many spawning streams at the east end of Port Valdez, however, most of these streams would not be directly affected by this project due to their distance from the site. The only spawning system in the area

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directly affected by the project is the Robe Lake system. As a result of concern expressed over this resource, design changes in plant layout have already occurred, such as eliminating the tank farm from this system's drainage area. Currently, the only surface disturbance to the Robe Lake drainage would be the buried product pipeline bundle and accompanying access road which transports the refinery products to the product dock. Construction practices exist which could minimize impacts on the resource. Construction can also be carried out during times of the year when the impact on the resource would be minimal. There is also a salmon spawning creek within a thousand feet of the proposed product dock. The design of the product dock was undertaken to produce minimal impacts during both construction and operation. Construction can occur during those seasons when potential impacts on the fishery resources are few. Operation of the dock, including implementation of appropriate spill prevention measures, would not present a significant disturbance to the locality.

Spill prevention and control is one of the basic objectives of the design and operation of the proposed facility. Among specific design parameters are: containment dikes around all feedstock and product tankage; ability to treat contaminated storm water in the wastewater treatment facility; containment of storm water from the process areas; leak detection for the pipeline system and appropriate use of valves to minimize potential

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spill volumes. Such measures will protect both the surface and ground water from contamination and hence would minimize the risk of indirect impacts on other elements of the ecosystem. Prior to operation, ALPETCO would be required by the State of Alaska, to prepare a spill prevention and control plan and an oil spill contingency plan. Such plans would be consistent with those in force at the Alyeska pipeline terminal facility and would be based in part on experiences acquired at that facility.

As a result of the proposal, there would be an increase in tanker traffic through Prince William Sound and Port Valdez. One additional vessel, ranging in size from ten to eighty thousand dead weight tons, would enter Port Valdez approximately every other day. The Coast Guard operates a vessel tracking system in Port Valdez, and indicates their existing system can easily handle the increase in traffic projected by the project. The risk of tanker accidents transiting the area is considered low because of the Coast Guard system.

At the present time, the City of Valdez is uniquely suited to handle the impacts caused by a large construction force and a smaller permanent work force. The city has grown and changed a great deal during the pipeline days. Many of the existing services, such as fire and police, are already sufficient to accommodate the expected short and long term growth. Some facilities, such as schools, sewage and solid waste facilities, are already being upgraded by the city, with

this project in mind. The city is currently developing a comprehensive plan, to be completed this year, which should provide adequate guides and safeguards for the growth anticipated by this proposal. The city, having gained experience with the Trans Alaska pipeline project, has a good idea of the types of problems to expect and is currently building on that experience. It's working very hard to anticipate the needs and impacts of this proposal and it is capable of handling the financial loads of the planning studies and of facility upgrading. The City of Valdez has stated that it will not require additional State or Federal governmental financial support.

Many, there were many other studies and other types of impacts evaluated during the past year that are discussed in detail in either the EIS or the Technical Analysis. I haven't even tried to give you a list of all the things that we've looked at. All I've tried to do here tonight is give you a brief summary of the major elements of the environment affected by this proposal. Further details on some of these other impacts can be found in the EIS. There's a table at the entrance to the room and we have cards on it that you can sign in on so that we can keep track of who attended this hearing.

At this time, I'd like to let Mr. Bill Lamoreaux speak on the NPDES permit.

MR. BILL LAMOREAUX: Good evening. My name is Bill Lamoreaux and I'm employed as an Environmental Engineer in the

Alaska Operations Office of the Environmental Protection Agency. Our office is located in Anchorage in the new Federal Building. It is my intention to explain the rational used in developing the draft permit called the National Pollutant Discharge Elimination System permit, and I'll refer to it as the NPDES permit. Helping me will be personnel from the State of Alaska Department of Environmental Conservation who jointly share an active role in the permitting process.

The draft NPDES permit is based on requirements of the Clean Water Act as amended in 1977. This Act stipulates certain levels of treatment technology to be applied as a minimum to all point source discharges of waste water. As written, the Act requires that new discharges, such as ALPETCO, that New Source Performance Standards, as promulgated by EPA, be imposed. It is important to remember that these standards are really technology related standards and do not necessarily relate to potential water quality impacts. Also, however, the Clean Water Act requires that discharges be controlled sufficient to protect the receiving water from adverse impacts and further, that the State of Alaska have the opportunity to review and certify all EPA issued permits to the extent that the discharge will not violate existing State statutes, including the State of Alaska Water Quality Standards.

To accomplish this end, we have deliberately coordinated all aspects of the permit preparation process with the Alaska

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Department of Environmental Conservation personnel and now believe we have a draft permit that meets both of the major criteria, the achievement of current New Source Performance Standards, and compliance with the State of Alaska Water Quality Standards.

I would like to briefly outline the structure of the proposed discharge permit, as well as explain the critical elements which relate to EPA's New Source Performance Standards. Following this, Joyce Bealman of the Alaska Department of Environmental Conservation, will outline permit conditions which relate to limits for protection of water standards and elements of a long term biological monitoring study designed to measure any possible effects of the discharge upon the marine environment.

To begin with, the permit addresses several different major areas. These are:

Discharge effluent limitations.

Effluent monitoring and reporting requirements.

Outfall discharge requirements.

Outfall diffusion study requirements.

Receiving water monitoring study, and

Other general conditions common to all NPDES permits.

Rather than go into a lengthy discussion of the general permit conditions, I would rather just refer to the draft permit and mention that these conditions cover such factors as non-

compliance reporting, right of entery, bypass, upsets, civil and criminal liability, oil and hazardous substance liability, to name just a few.

The majority of the effluent limits contained on pages 2, 3, 5 and 6 of the permit are based on promulgated New Source Performance Standards. These standards establish allowable effluent limits for certain pollutants based on production levels and process configuration. For example, the allowable effluent limit for oil and grease from the process waste stream is three hundred and thirty pounds average and six hundred and ten pounds maximum per day. The product level assumed in these calculations are a hundred and sixty-one thousand, four hundred and forty barrels per day throughout. Additional discharge allowances are allowed for the separate sources of ballast water and storm water runoff from process areas. These extra allowances are also a reflection of the same New Source Performance Standards with the exception of the oil and grease limits for ballast water, which is stipulated at the tighter effluent limits currently being achieved for ballast water by Alyeska Pipeline Service Company located here in Valdez.

Two parameters in the effluent waste stream are limited because of possible impacts on the receiving water, Port Valdez in this case, outside of a defined mixing zone. The effluent parameters of aromatic hydrocarbons and cyanide are limited to levels which after achieving a seventy-five to one dilution,

should be capable of meeting State Water Quality Standards. For a more detailed explanation of the effluent limits and their determination, I would like to reference you to the draft permit and fact sheet, which are contained in the draft EIS document.

ALPETCO will be allowed a mixing zone which is defined on pages 7 and 8 of the draft permit. This is a relatively small area, roughly allowing a hundred and fifty meters from the end and sides of the diffuser pipe. This mixing area will be, will allow the discharge plume to achieve its optimum dilution prior to stratifying. Outside of the mixing zone, water quality standards must be met and maintained. Doug Redburn will discuss the more significant water quality standards following my discussion.

It is a requirement that the diffuser system achieve a minimum dilution ratio of seventy-five to one at all points outside the mixing zone. ALPETCO will be required to submit a design report on the diffuser at least six months prior to diffuser construction to EPA and ADEC for approval before construction can commence. If the seventy-five to one dilution rate cannot be met, ALPETCO can request a reduction to the dilution rate upon a showing that certain sensitive effluent parameters, for example, aromatic hydrocarbons and cyanide, are correspondingly reduced in the effluents such that the concentration of the parameters at the edge of the mixing zone does not exceed those levels necessary to meet Alaska water standards.

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A significant aspect of the permit is the extensive effluent monitoring. The permittee is required to monitor all effluent limit parameters except nickel and aromatic hydrocarbons, daily. Nickel and aromatic hydrocarbons are to be monitored twice weekly. Besides these parameters, however, the permittee will be required to monitor an additional seventeen parameters on a monthly or quarterly basis. Mostly, these parameters are those listed on EPA's toxic list and have been found in the effluents of similar refineries around the country, but have not as yet been listed or limited in the EPA's New Source Performance Standards for refinery complexes.

I have provided just a very brief overview of certain elements of the draft NPDES permit. Joyce Bealman from the Alaska Department of Environmental Conservation is here tonight and will provide some explanation of effluent limited receiving water parameters contained in the permit necessary to protect Alaska Water Standards, as well as a comprehensive biological monitoring study in Port Valdez to evaluate subtle impacts caused by the discharge of waste waters to Port Valdez. This work, biological work, was primarily a product of Doug Redburn of the Department of Environmental Conservation. I worked with him extensively throughout the drafting process. He is located in their Juneau office and is unable to be here tonight. Once again, I encourage you to read the draft permit, and especially the fact sheet, for a better understanding of the rational used

in preparing this permit. Thank you.

HEARING OFFICER: Joyce?

MS JOYCE BEALMAN: Thank you. As you've heard, I'm Joyce Bealman with the Department of Environmental Conservation here in Valdez and I'm going to be using the testimony that was given in Anchorage by Doug Redburn who works along with EPA in drafting, in the department's drafting of conditions for the receiving water monitoring program outlined in Section E.2 of the draft NPDES permit for the ALPETCO facility. So the following is his testimony.

Our department is responsible for establishing and enforcing water quality standards for all State waters. Standards of particular importance in this permit are aromatic hydrocarbons, cyanide, several potentially toxic heavy metals, pH and suspended sediments. Aromatic hydrocarbons shall not exceed ten micrograms per liter in the water or cause deleterious effects to biota in sediments; toxic substances shall not exceed zero point zero one LC_{50} of the most sensitive life stage identified by DEC in the area. Suspended sediments shall not exceed ambient levels at the boundary of the mixing zone. The purpose of the receiving water monitoring program is to insure that our standards are maintained outside of the mixing zone and that the components of the effluent, individually or collectively, do not cause significant alterations in the chemical and biological environment.

The development of the proposed monitoring program was based on five principles:

First, a desire to detect any subtle changes in water quality and evaluate the type and magnitude of any sublethal responses of key indicator species chronically exposed to low levels of aromatic hydrocarbons and heavy metals.

Second, to develop the capability to detect and to evaluate gradients in responses of organisms at varying distances for the diffuser.

Third, to utilize the information from previous marine reconnaissance studies in Port Valdez as an aid in selecting representative stations, and subsequently, in developing a more cost effective monitoring program.

Fourth, to provide for adequate chemical characterization of the sedimentary environment in conjunction with biological sampling, emphasizing compounds with long residence times such as substituted naphthalenes and polynuclear aromatic hydrocarbons.

Fifth, to provide an improved statistical basis for detecting change by adopting a program of rigorous sampling at a few representative stations rather than broad reconnaissance at numerous stations throughout the Port.

In developing the specific tasks of the monitoring program, which I shall discuss shortly, the department has benefited greatly from previous marine studies in Port Valdez, most

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notably the preliminary biological investigations of Dames and Moore for the ALPETCO project and those of the Institute of Marine Science conducted to fulfill the monitoring requirements of the ALYESKA ballast water discharge permit. These sampling efforts have isolated certain biological assemblages or station groupings that share several common affinities and have guided us in selecting a few representative stations within these groupings for comprehensive followup.

The IMS studies, in pointing to the apparent basence of any detectable changes, on a gross, short term level, in community structure and biomass, suggested that gross community changes should be deemphasized in lieu of detecting subtle changes on the individual species level. For this reason, sampling stations in this permit are located as near the diffuser outfall as practicable and address subtidal and intertidal indicator species, keying on major life history events, gametogenesis, spawning periods, growth, while retaining basic abundance and zonation studies.

With these concepts in mind, the department has endeavored to establish a statistically supportable monitoring program providing the maximum amount of information for the money. The program is designed primarily to provide evidence of any subtle variations in normal species life history functions, be it changes in fecundity, growth, or spawning periodicity of major invertebrates, as a function of distance from the

proposed diffuser. The community studies should provide ample basis for detecting any major changes in community structure. The sampling stations are located on the assumption that the outfall location as proposed in the DEIS will be the ultimate location.

The monitoring program consists of six main elements:

One, abundance and zonation studies conducted three times per year at three permanently established muddy intertidal transects, both adjacent and distant from the outfall;

Two, shallow subtidal extensions of these stations, to be occupied at the same frequency;

Three, benthic studies at five stations in the far eastern Port with eight replicate grabs per station;

Fourth, studies of key biological events in the life histories of selected intertidal and subtidal indicator species, including reproductive phenology and seasonal and annual growth;

Fifth, hydrocarbon and heavy metal characterization of sediments, water and biota at all biological sampling stations plus a suite of stations very near the diffuser;

Sixth, assessing the condition index or condition factor of two common bivalve species, one found intertidally and another subtidally.

This later concept in pollution monitoring is a measure of an organism's overall physiological fitness and is defined

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as the ratio of the organism's dry weight divided by its shell volume. The index has been used successflly by several researchers in controlled, long term experiments to evaluate organism response to hydrocarbon stress. We have chosen to apply this relatively inexpensive approach as part of our overall monitoring strategy.

And that's the testimony of Doug Redburn last night in Anchorage.

MR. MICHAEL JOHNSTON: Good evening. My name is Michael Johnston and I am Chief of the New Source Permit section with Region 10 of the Environmental Protection Agency. I am here tonight to discuss the Prevention of Significant Deterioration requirements for the ALPETCO project.

Before I discuss the project itself, some background regarding the Prevention of Significant Deterioration program might be helpful. Because the term Prevention of Significant Deterioration is so cumbersome, I will refer to that term by use of its initials, PSD.

The first PSD program was established by EPA in 1974 as a result of court action and addressed only nineteen specific source categories. In the Clean Air Act amendments of 1977, Congress expanded on EPA's effort outlining detailed programs that address all major construction or modification projects that are potential air pollutant emitters.

In order to understand the PSD program, one must first

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understand the concept of the PSD increment. Under existing regulations, the baseline, or reference date for calculating increment consumption, is August 7, 1977. The baseline air quality is the existing air quality in the proposed construction area as of that date. The PSD increment is simply the amount of air quality degradation allowed beyond the baseline air quality. The increment is expressed in terms of micrograms of pollutants per cubic meter of ambient air.

I've got a diagram up here that might be of some help in understanding what the basic program is all about. This axis is air quality, and as I said, it's measured in micrograms per cubic meter of ambient air. The baseline air quality is the air quality as of the baseline date, or August 7. The PSD increment describes the amount of degradation allowed by the Clean Air Act. This baseline air quality may change, or may be different in different areas, depending on the amount of development that occurs in any given area. In no case is this allowed degradation to go above the National Ambient Air Quality Standards, this is the top level. The whole purpose of the PSD program is basically keep clean areas clean without totally restricting growth.

Before a major new source construction or modification can take place, a PSD permit must be obtained. In order to obtain this permit, an applicant must make three demonstrations:

One, the source will incorporate state-of-the-art air

pollution control technology taking into account energy, economics and the environment. This level of technology is termed Best Available Control Technology, or BACT.

Two, the source will not cause a violation of the PSD increment.

Three, the source will not cause or contribute to a violation of a National Ambient Air Quality Standard. These are the approval criteria. In addition, the PSD regulations require a public disclosure of the effect of the project on soils, vegetation and visibility.

Let me expand a bit on the primary criteria for approval.

The procedure for determining Best Available Control Technology is relatively straightforward. Control equipment and operating experience from similar facilities recently built in other parts of the country were analyzed to determine the control systems which result in the lowest reasonable emissions from the various emission points.

In order to determine the impact of the proposed source on the National Ambient Air Quality Standards and the PSD increments, atmospheric diffusion modeling must be conducted. Existing monitoring for both the meteorological conditions and existing pollutant levels. Then, projected pollution emission rates from the proposed source's emission points, as controlled by Best Available Control Technology, are input into a computer simulation model that predicts the impact of the source on air

quality in the area under various meteorological conditions defined by the monitoring effort, and various plant operating conditions. If the project impacts do not exceed the PSD increments, if these impacts, when added to the existing pollutant levels, do not cause violations of any National Ambient Air Quality Standard, and if the source will install the Best Available Control Technology, a PSD construction and operating permit can be issued.

In order to minimize the amount of time and money needed to fulfill the air quality impact analysis requirements, an escalation process has been developed. Screening techniques are used first to predict project impacts. These techniques are quite simple and assume worst case conditions resulting in very conservative results. If these techniques show a threat to the PSD increments or national standards, more refined techniques are utilized in making impact predictions. The only standard EPA approved technique available for predicting air quality impacts of a source locating in complex terrain is the Valley model. In the case of ALPETCO, this conservative technique showed violations of PSD increments. Because the Valley model is a conservative screening technique, a more refined hybrid model was developed using two models designated in EPA's document, Guideline on Air Quality Models. This hybrid model and its application to the Valdez situation was reviewed by EPA regional and national experts in the field of air quality

modeling and determined to be appropriate for this application. In addition to such review, the Clean Air Act requires that any alteration of a guideline model be made available for public comment. A detailed description of the hybrid model is available in the Technical Analysis document, part of the Preliminary Determination available at the Public Inspection locations. I have a few copies of the Technical Analysis document here tonight as well.

On October 8, 1979, EPA received a PSD application for the ALPETCO project. This initial application was supplemented on November 23rd, December 4th, and December 11th, 1979, with additional information requested by EPA. The ALPETCO refinery is subject to PSD review for emissions of sulfur dioxide, nitrogen oxides, particulate matter, carbon monoxide and hydrocarbons. After a detailed review of ALPETCO's application, EPA determined that the company proposed to install BACT for all emission points except for fluid catalytic cracking unit. We have determined that a lower sulfur dioxide emission rate than that proposed by ALPETCO is reasonably achievable and have imposed this as a condition of our tentative approval of the ALPETCO project. A detailed ambient air quality impact analysis was also conducted. Air quality and meteorological monitoring was conducted at two locations near the plant site specifically for this project. In addition, data was obtained from four existing sites in the Valdez area. Refinery emissions

data and area wide meteorological data were used with a mathematical model to predict the ambient air quality impacts of the ALPETCO project. These projections were then superimposed on existing air quality to determine the expected air quality during refinery operations. With the installation of Best Available Control Technology, no violations of the PSD increments or National Ambient Air Quality Standards are expected. It should be noted, however, that for the case of sulfur dioxide, nearly the entire available PSD increment in the east end of the Port will be consumed. This will be a consideration for future growth near the ALPETCO site for sources emitting SO_2.

The impact of the project on soils and vegetation is not expected to be significant. There will be a minor impact on visibility as a result of the project. Two plumes from the source may be visible due to entrained water vapor. Additionally, a slight visible plume can be expected from the tankers calling at the refinery terminal.

As a result of our detailed review of ALPETCO's project, EPA has preliminarily determined that the PSD requirements have been fulfilled and unless substantive information is offered to the effect that the refinery should not be built, or that it should be built differently, EPA intends to issue a PSD permit for this facility.

Thank you.

CAPTAIN MICHAEL MAHONEY: Hello, my name is Mike Mahoney,

I work for the Alaska District Corps of Engineers in the Regulatory Functions Branch. Our offices are located on Elmendorf Air Force Base, which is just adjacent to Anchorage, so you can stop in if you have any problems if you get a chance.

I'm here tonight because the Corps of Engineers is a cooperating agency with the EPA for the finalization of this EIS and also because the Corps of Engineers has permit jurisdiction over several portions of the ALPETCO project. My presentation tonight will touch on three topics.

First, I want to give you a brief overview of the Corps of Engineers administered Section 10 and Section 404 permit program. Secondly, I want to explain what our jurisdiction is in the ALPETCO refinery project, and finally, I'd like to briefly update where those permit applications are today.

Now first of all, the DA permit program which involves this project is divided into two areas. We've got Section 10, which I refer to, Section 10 of the Rivers and Harbors Act of 1899. It charges the Secretary of the Army with insuring that all structures or work in or affecting navigable waterways of the United States are in compliance with that law. Now for the project we're talking about tonight, that includes all of the work at the tanker facility and all of the work at the temporary construction dock.

The second portion of our permit program, Section 404 of

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the Federal Water Pollution Control Act of 1972, otherwise known as the Clean Water Act, now it stipulates that the Secretary of the Army, through the Corps of Engineers, will regulate the discharge of dredge or fill materials into waters of the United States. Now here we have jurisdiction for this project over the fill activities, over the temporary construction dock, over the fills that are going to be required for pipes, roadway crossings at the refinery site, and over use of grout to anchor piles at the terminal facility, or the tanker facility.

The Corps of Engineers issues permits as specified in Section 33, Code of Federal Regulations, Part 325. The applicant, in this case ALPETCO, must first submit an application with a plan that adequately describes the project, then the Corps of Engineers issues a public notice to solicit comments from the general public and from all of the interested agencies. The Corps of Engineers, you see, is required to conduct what we call a general public interest review. Now that review involves a study by the Corps of Engineers, it involves an analysis of all the comments received from the interested agencies and from the general republic -- excuse me, the general public, and it involves an analysis of the rebuttal or explanatory comments authored by the applicant if someone objects to his project. Now at the end of that public interest review, if the Corps of Engineers decides to issue a permit, that permit will be subject to the general permit conditions and we may also make it subject

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to any special provisions which we deem necessary to protect the environment or any other special interest group.

Now in that regard, public notices were issued on 19 October 1979 to solicit comments for the proposed ALPETCO refinery facility, they were titled Port Valdez 84 and Port Valdez 85. The first public notice dealt with the tanker facility. Now that work includes the loading platforms, the dolphins, the connecting walkways, pipeways, roadways. We have Section 10 jurisdiction over all of that work because Port Valdez is a navigable waterway. We also have Section 404 jurisdiction over the use of grout to anchor any piles of bedrock where that is needed, now that's because grout is considered fill material.

The second public notice described the refinery and its supporting facilities. At the temporary construction dock, we have Section 10 authority over the fill activity, the dredging, sheet pile curtain and the concrete ramp. At the same location, we have Section 404 jurisdiction over the fill activities and over the placement of wet concrete to form that ramp because wet concrete, again, is considered fill material.

Now at the refinery site itself, we have Section 404 jurisdiction over all of the fills which are used to take the road or a pipeline across a stream or wet land in that area.

Now we usually have a thirty-day comment period on public notices. That thirty-day period for each of these public

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notices has been extended to allow for completion of the EIS. We have received several comments from folks just like you who are interested in the project and a couple of the agencies have finalized their comments. Most of the agencies have opted to wait until the EIS procedure is finalized before commenting. Now when the final EIS is published and all the required comments received, the Corps of Engineers will make its final determination in this case. If any and all objections we have received have been adequately resolved at that time, the permit should be issued within fifteen days. If there are still outstanding, unresolved objections, the permit will not be issued until the District Engineer is certain that this project is in the general public interest.

Now that, admittedly, is a very brief explanation of what the Corps of Engineers' involvement in this project has been. I brought some pamphlets with me which further explain the Corps of Engineers permit program if any of you are interested.

I'd like to thank the EPA for the opportunity to speak before you folks tonight and I'd like to thank you for your attentivness during my presentation.

MR. DU BEY: Thank you, Mike. We have received one request to make a presentation at the completion of our presentation to provide you with background information. Is there anyone else who would like to make a presentation? (No response) Okay, let me call upon, then, Mayor Walker to come forward,

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please, and make his presentation.

MAYOR BILL WALKER: Good evening. My name is Bill Walker, Mayor of Valdez. On behalf of the City, I would like to welcome you to Valdez and thank you for giving us the opportunity to partake of the information you've given us this evening.

A little background, I have no written formal statement, but a little history on the support of the City of Valdez on this project.

We became interested in the project when the Royalty Oil Board began having hearings throughout the State. We invited them to come to Valdez, they had one of their meetings here and following that, we kept track of each hearing and tried to be present at those hearings. Now when they selected, in Juneau, one of the seven companies who received the royalty oils, we began to seek their admittance of Valdez as the site selection. Just prior to our becoming extremely aggressive in this path, we took a public opinion poll, and that was conducted over a period of several weekends in one of our local grocery stores who volunteered any help with the ballots, asking them if they were for such progress or not. The results of that poll were overwhelming, five to one, in support of this project. Based on that support, the City of Valdez became very aggressive in bringing ALPETCO to Valdez. There was a lot of competition and it was through the efforts of the entire City of Valdez behind this project to do it. I don't think you could find a

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community more aggressively supporting this project or any project such as this.

That pretty well summs up my comments. I just wanted to be sure that it was in the record that the City of Valdez is very much in support of this project.

Thank you.

MR. DU BEY: Is there anyone else who would like to make a statement at this time? (No responde) Okay, I see no hands, so if that's the case, I suggest we take a five minute break and then have a question and answer period. We'll go on break for five minutes.

(The hearing recessed at 8:30 p.m. and reconvened at 8:40 p.m.)

MR. DU BEY: Okay, we are back on the record. The third phase of our hearing will be the question and answer period and the panel is eager if you have questions or if you would like anything clarified that wasn't made clear, or any other questions you might have. Who's going to ask the first question?

MR. RON DAGON: Mr. Du Bey, I've been negligent. We have two people from ALPETCO here tonight that some people don't know and I'd like to introduce them.

MR. DU BEY: Okay, let me ask the question. Is there anyone else here from ALPETCO?

(Laughter)

MR. DICK BARNES: My name is Dick Barnes, I'm Vice

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President for Alaska Operations and I'm based in Anchorage. Jack Sedwick is Special Counsel for the project and he's with Burr, Pease and Kurtz.

MR. RON DAGON: Thank you.

MR. DU BEY: You're welcome. Anybody have any other questions? (No response) Any statements? (No respone) Okay, I see no hands. If that's the case then our hearing is adjounred.

(The hearing adjourned at 8:43 p.m.)

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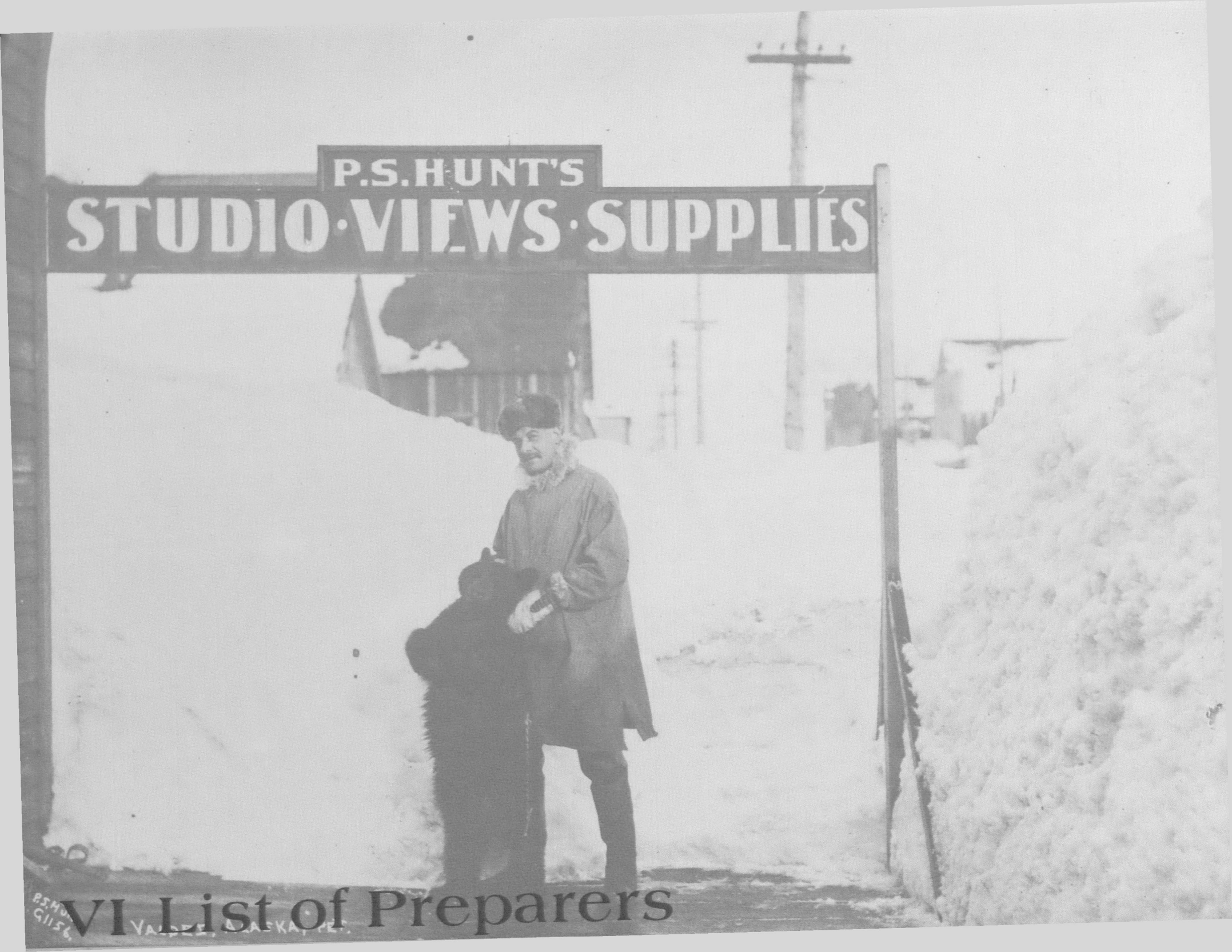

VI. List of Preparers

This Environmental Impact Statement has been prepared by CCC/HOK-DOWL performing as a third-party consultant to EPA. CCC/HOK-DOWL is an association of two Anchorage, Alaska, consulting firms, DOWL Engineers and CCC/HOK Architects and Planners. Under the management of CCC/HOK-DOWL, a multidisciplinary team of specialists was assembled to perform the work. Following is a list of the firms and persons of primary responsibility engaged in preparation of the EIS. Brief biographies of Corps of Engineers personnel follow this list. Biographical sketches of other preparers appear in Attachment A, which was released with the Draft EIS.

EPA REGION 10 - LEAD AGENCY
1200 Sixth Avenue
Seattle, WA 98101

Deborah K. Kirk, Project Officer
Daniel I. Steinborn, Energy Coordinator
Alexandra Smith, Acting Division Director, Air & Hazardous Materials Division
Lloyd Reed, Division Director, Enforcement
Mike Johnston, Chief, New Source Permits Section
Sylvia Kawabata, NPDES Coordinator
Lee Marshall, PSD Coordinator
Robert G. Courson, Chief, Technical Support Branch
Robert B. Wilson, Regional Meteorologist
Paul Boys, Chemical Engineer, Air Surveillance Section
John R. Yearsley, Environmental Engineer
William H. Lamoreaux, Industrial NPDES permit coordinator, Alaska Operations Office
William B. Lawrence, Corps of Engineers coordination, Alaska Operations Office
Deborah Yamamoto, Noise Program

CORPS OF ENGINEERS, ALASKA DISTRICT - COOPERATING AGENCY

P. O. Box 7002

Anchorage, AK 99510

Benjamin B. Kutscheid, Ecologist

Philip J. Brna, Forester

Evelyn J. Elder, Fisheries Biologist

Richard J. Gutleber, Biologist

CCC/HOK-DOWL - MANAGEMENT STAFF

4040 B Street

Anchorage, AK 99503

Lewis E. Dickinson, Partner, DOWL

Edwin B. Crittenden, Senior Officer, CCC/HOK

John E. Paulson, Project Manager

Kenneth E. Stroh, Project Coordinator

Priscilla Post Wohl, Assistant Coordinator

Vicky N. Sterling, Technical Writer/Editor

Roberta E. Goldman, Resource Assistant, Graphic Artist

Alma D. Hartman, Word Processor

William E. Palmer, Draftsman

DOWL ENGINEERS

4040 B Street

Anchorage, AK 99503

Responsibilities: Hydrology, geology, seismology, soils

Harry R. Lee, Geotechnical Engineer

David A. Cole, Jr., Geotechnical Engineer

Toraman Sahin, Hydrologist

Robert W. Kranich, Jr., Hydrologist

Jordan Jacobsen, Geophysical Engineer

Terry L. Barber, Geologist

CCC/HOK ARCHITECTS & PLANNERS
801 West Fireweed Lane
Anchorage, AK 99503

Responsibilities: Socioeconomics, transportation

Gordon S. Harrison, Economist
Richard K. Morehouse, Environmental Planner
Steven M. Reiner, Planner
Alan M. Voorhees and Associates, Inc., Special Consultant, Berkeley, CA
Northrim Associates, Special Consultant, Anchorage, AK

ALASKARCTIC
P. O. Box 397
Fairbanks, AK 99707

Responsibility: Archaeology

Glenn H. Bacon, Archaeologist

ATKINSON, CONWAY, YOUNG, BELL AND GAGNON, INC.
420 L Street, Suite 500
Anchorage, AK 99501

Responsibility: Permits and regulations

John Treptow, Attorney at Law

DAMES & MOORE
800 Cordova Street
Anchorage, AK 99501

Responsibilities: Ecosystems, air quality

James B. Hemming, Arctic Biologist
Charles B. Fahl, Meteorologist

METCALF & EDDY, INC.
50 Staniford Street
Boston, MA 02114

Responsibility: Oceanography

Jekabs P. Vittands, Vice President
David R. Bingham, Hydrodynamic Engineer
Joseph Colonell, Special Consultant, Institute of Marine Science, University of Alaska
Donald R. F. Harleman, Special Consultant, Massachusetts Institute of Technology
E. Eric Adams, Special Consultant, Massachusetts Institute of Technology
Miles O. Hayes, Special Consultant, Research Planning Institute, Inc., South Carolina

THE PACE COMPANY CONSULTANTS AND ENGINEERS, INC.
5251 Westheimer
Houston, TX 77052

Responsibilities: Plant processes, wastewater treatment, marine transportation

Douglas L. Burton, Vice President, Engineering Services
F. Paul Pizzi, Project Manager, Environmental Management Services
Peter E. Kelly, Manager, Process Design Services
Richard F. Smullen, Senior Consultant, Environmental Management Services

TOWNE, RICHARDS AND CHAUDIERE, INC.
105 NE 56th Street
Seattle, WA 98105

Responsibility: Acoustics

Robin M. Towne, President
Jan Hauge, Acoustical Engineer

CORP OF ENGINEERS PERSONNEL

Benjamin B. Kutscheid - Ecologist
Expertise: Wetland ecology, environmental assessment
Experience: Nine years as biologist/ecologist for the Corps of Engineers in Alaska, North Carolina, Virginia, West Virginia, Ohio and Kentucky. Involvement in EIS preparation, vegetation mapping, wetland evaluation, environmental planning. One year as Planning Associate with the Board of Engineers for Rivers and Harbors; two years on the Illinois Natural History Survey.

Philip J. Brna - Forester
Expertise: General biological and ecological analysis
Experience: Two and one-half years in Alaska. Involvement in EIS preparation, vegetation mapping, wetland evaluation and environmental planning. Environmental Coordinator for the Alaska District.

Evelyn J. Elder - Fisheries Biologist
Expertise: Chemistry, general biology
Experience: Three years with the Alaska District Corps of Engineers, one year in the Regulatory Functions branch and two years in environmental studies. Involvement in permit processing, EIS preparation and review, and wetland determinations and evaluations.

Richard J. Gutleber - Biologist
Expertise: Biological applicability under the COE Regulatory Program
Experience: Nine years as biologist with the Corps of Engineers; background supervisor of field operations for limnological studies of the Great Lakes, Detroit District; involvement in preparation of environmental statements dealing with civil works and regulatory projects; team leader of an underwater biological investigation team; and preparation of environmental evaluations for the Section 404 concerns of the Corps' regulatory program.

VII EIS Distribution List

EIS DISTRIBUTION LIST

The following list of recipients of the EIS is arranged with federal agencies first, followed by state agencies, local agencies, and interested groups. A copy of the Draft EIS was mailed to each of the agencies or groups listed below; in addition, a copy of the Final EIS automatically will be mailed to each recipient on this list marked with an asterisk.

FEDERAL AGENCIES

U.S. Environmental Protection Agency

Office of Environmental Review EIS Filing Section (A-104) - Washington D.C.*
Oil and Special Materials Division Water Progress Operations (WH-548)*
Office of Public Affairs (A-107)*
Office of Legislation (A-102)
Alaska Operations Office*
Office of Legislation (A-102) Congressional Affairs Division*
Office of Water Programs Operations Water Quality and Nonpoint Source Division
Office of Enforcement
Region I Regional Administrator, Boston, Massachusetts*
Region II Regional Administrator, New York, New York*
Region III Regional Administrator, Philadelphia, Pennsylvania*
Region IV Regional Administrator, Atlanta, Georgia*
Region V Regional Administrator, Chicago, Illinois*
Region VI Regional Administrator, Dallas, Texas*
Region VII Regional Administrator, Kansas City, Missouri*
Region IX Regional Administrator, San Francisco, California*

U.S. Department of Interior

Office of Environmental Project Review*
Office of Assistant to the Secretary of Interior*
Bureau of Land Management, Alaska Outer Continental Shelf Office, Anchorage
U.S. Fish and Wildlife Service, Anchorage*
Western Alaska Ecological Systems, Anchorage*
Office of Biological Services, Anchorage

National Park Service, Alaska Area Office
Bureau of Indian Affairs, Juneau, Alaska
Heritage Conservation and Recreation Service, Anchorage
U.S. Geological Survey, Water Resources District, Alaska District
Alaska Resources Library*

U.S. Department of Commerce

National Marine Fisheries Service, Portland, Oregon*
National Oceanic and Atmospheric Administration/National Marine Fisheries Service, Juneau, Alaska*
National Oceanic and Atmospheric Administration, Anchorage*
National Marine Fisheries Service, Anchorage*

U.S. Department of Housing and Urban Development

Environmental Officer for Community Plan and Management, Seattle, Washington*
Anchorage Area Office, Anchorage
Region X, Office of Community Planning, Seattle, Washington

U.S. Department of Agriculture

Coordinator of Environmental Quality Activities*
Area Conservationist, Bellevue, Washington*
U.S. Forest Service, Director, Juneau, Alaska*

U.S. Department of Transportation

Region X, Seattle, Washington*
Marine Safety Office, Anchorage
Federal Highway Administration, Juneau, Alaska
Federal Aviation Administration, Anchorage
U.S. Coast Guard, 17th Coast Guard District, Juneau, Alaska*

U.S. Department of Defense

Department of the Army, District Corps of Engineers, Anchorage*
Department of the Army, District Corps of Engineers, Seattle, Washington*
Department of the Army, District Corps of Engineers, Bloomington, North Carolina
Department of the Navy, 13th Naval District, Seattle, Washington

U.S. Department of Energy

U.S. Department of Energy, Washington, D. C.

U.S. Department of Energy, Alaska Regional Office

U.S. Department of Energy, Region X, Regional Representative*

U.S. Department of Health, Education and Welfare

Public Health Service, Davisville, Rhode Island*

Regional Environmental Officer, Seattle, Washington*

Advisory Council on Historic Preservation, Office of Archaeological and Environmental Preservation, Washington, D.C.*

Council on Environmental Quality, Washington, D.C.*

National Resources Defense Council, Project on Clean Water, Washington, D.C.*

Economic Development Administration, Anchorage

Federal Energy Office, Enviornmental Impact Division*

Federal Maritime Commission, Washington, D.C.

U.S. Legislature

Honorable Ted Stevens, U.S. Senator*

Honorable Donald Young, U.S. Representative*

Honorable Mike Gravel, U.S. Senator*

STATE AGENCIES

Office of the Governor

Honorable Jay S. Hammond, Governor*

State Planning and Research, Juneau*

State Clearinghouse, A-95 Coordinator*

Division of Policy Development and Planning

Alaska Growth Policy Council*

Alaska Oil and Gas Conservation Commission, Anchorage

Department of Commerce and Economic Development, Juneau

Divison of Economic Enterprise, Juneau

Alaska Industrial Development Authority, Juneau

Alaska Pipeline Commission, Anchorage

Division of Energy and Power Development, Anchorage

Department of Community and Regional Affairs

Department of Education, Juneau

Department of Environmental Conservation

- Planning and Program Coordinator, Juneau*
- South Central Regional Office, Anchorage*
- Prince William Sound Regional Office, Valdez

Department of Fish and Game

- South Central Region, Anchorage*
- Habitat Protection, Fairbanks*
- Glennallen Office*

Department of Health and Social Services, Juneau

Department of Labor, Juneau

Department of Natural Resources

- Division of Geological and Geophysical Survey, Anchorage
- State Historic Preservation Officer, Anchorage

Department of Revenue

- Petroleum Revenue Division

Department of Transportation and Public Facilities

- Division of Highways, Juneau

Alaska Energy Allocation Assistance Officer, Anchorage*

Land Use Planning Commission for Alaska, Anchorage

Alaska Fisheries Council, Juneau

LOCAL AGENCIES

Honorable Bill Walker, Mayor of Valdez*
Mark Lewis, Valdez City Manager*
City of Valdez*
Valdez Chamber of Commerce*
City of Cordova
Cordova Chamber of Commerce*
Resource Development Council*
Municipality of Anchorage - Water Department*

INTERESTED GROUPS

AEIDC, University of Alaska, Anchorage*
Alaska Center for the Enviornment, Anchorage*
Alaska Conservation Society, Fairbanks, Alaska*
Alaska Conservation Society, Taku Chapter, Juneau, Alaska*
Alaska League of Women Voters
Alaska Public Interest Research Group, Anchorage*
Alaska Wildlife Federation and Sportsman's Council, Inc., Fairbanks, Alaska
Aleut Corporation, Anchorage*
Anchorage Historical and Fine Arts Museum*
Bradyo Associates Insurance*
Brooks, Woody, Davis California
Calista Corporation, Anchorage*
Center for Urban Affairs, Northwestern University*
Center for Urban Affairs, Evanston, Illinois*
Chevron, U.S.A., San Francisco, California*
CH2M-Hill, Anchorage*
Cole, Hartig, Rhodes, Norman and Mahoney, Anchorage
Colorado State University, Fort Collins, Colorado*
Consolidated Marketing, Inc., Denver, Colorado*
Copper River School District, Glennallan, Alaska
Dames & Moore, Los Angeles, California
Doherty, Mike, Port Angeles,Washington

Doyon Limited, Fairbanks, Alaska*

Energy Impact Associates, Pittsburgh, Pennsylvania

Fairbanks Environmental Center

Farmers Home Administration, Palmer, Alaska

Gorton, Sharl, Sacramento, California

Institute of Marine Science, University of Alaska

Institute of Social and Economic Research, University of Alaska, Fairbanks*

Japanese Government, House of Councillors*

Kinnetics Labs*

KTVS News, Fairbanks

Le Beau, Joseph P., Knik, Alaska*

Lockheed Environmental Services, Anchorage*

Matanuska Electric Association, Inc.*

Mittelhauser Corporation, El Toro, California

National Wildlife Federation*

Oceanographic Institute of Washington*

ORI, Inc., Silver Springs, Maryland*

Ott Water Engineers, Inc., Anchorage

PMEL, Seattle, Washington

Prince William Sound Aquaculture Corporation, Cordova, Alaska*

Resource Development Council, Anchorage*

Rockwell International, Newbury Park, California*

RSKERL, Ada, Oklahoma*

Sierra Club, Alaska Chapter, Anchorage*

Sinnott, Richard*

S. Masuda, Inc.*

Sohio/BP, Anchorage*

Ted Forsi and Associates, Anchorage

Tenneco, Inc., Tennessee Gas Pipeline, Houston, Texas*

Trout Unlimited, Anchorage*

Trustees for Alaska, Anchorage*

University of Alaska, Division of Life Sciences, Fairbanks*

University of California, University Library, Davis

Valdez Fisheries Development Association*

Valdez Vanguard

Washpirg, University of Washington, Seattle, Washington

Washington Archeological Research Center, Washington State University*

William P. Lorentz and Company, Boston, Massachusetts

Wirtz, Jack, Los Angeles, California

Woodward, Hall & Primm*