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ZONE MANAGEMENT PROGRAM  
FINAL REPORT  
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1979

Coastal Zone Management Program

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COASTAL ENERGY IMPACT

DEPARTMENT OF FISHERIES COASTAL ZONE MANAGEMENT PROGRAM

PROJECT FINAL REPORT

For Period December 1, 1978 - December 31, 1979

Contract No. G79-062B

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DEPARTMENT OF FISHERIES

## Final Report

The Department effort expended on energy facilities in the State of Washington has centered on the Northern Tier pipeline proposal. Effort expended in the review and evaluation of this proposal has been determined largely by the deadlines entailed in reviews of both the Federal and State Environmental Impact Statements, the PURPA-V requirements and the processing of Northern Tier's application for site certification from the Washington State Energy Facility Site Evaluation Council (EFSEC).

In the last quarter of 1978 and the first quarter of 1979, the Department of Fisheries conducted a preliminary review of the application for site certification which Northern Tier had filed with EFSEC. We commented to EFSEC on the general inadequacies of the document on January 3, 1979. During the first quarter of 1979, a review of the Bureau of Land Management (BLM) Draft Environmental Impact Statement (DEIS). Our 41-page comment on the Draft EIS went out in the second quarter of 1979 (April 2, 1979).

The applicant's had announced a major change in the route for Northern Tier's proposed pipeline shortly before comments on the BLM-Draft EIS were due. Subsequently the application before EFSEC as well as the BLM-Draft EIS had to be changed to reflect the new proposed route which would take the pipeline across Puget Sound near Admiralty Inlet rather than around Hood Canal and the southern end of the Sound. Work within the Department of Fisheries was curtailed for the most part during the second and the beginning of the third quarters of 1979 as revisions to the pertinent documents were received and collated.

By the middle of the third quarter, work intensified as the agency began review of the Washington State Draft EIS on Northern Tier. We also began review of the applicants current material and preparation of material for the EFSEC pre-hearing conferences with Northern Tier representatives and consultants. Preparation ensued for the contested case itself which commenced in the fourth quarter of 1979 (the final quarter of the DOE CEIP 308C Grant).

In preparation for the Department's participation in the case, the following work was commenced in these last two quarters:

- a) Description and mapping of fish and shellfish resources and associated fisheries,
- b) Contact with experts outside the Department to testify on the effects of oil spills,
- c) Development of mitigative measures to lessen construction and operation impacts to be included as stipulations should EFSEC decide to certify the proposal despite the risk entailed, and
- d) On-site meetings with the applicants engineers to review stream crossings entailed in the route (Note: the location of all stream crossings is not presently known by the applicant so only the major crossings could be reviewed).

Some of the significant dates and correspondence during the contract period include:

<u>Date</u>	<u>Correspondence or Event</u>
1-3-79	WDF letter to EFSEC concerning the general inadequacies of the N.T. Application for Site Certification.
4-2-79	WDF written review of the BLM-Draft EIS (41 pages).
5-25-79	WDF letter to EFSEC concerning the Department's position relative to Northern Tier Cause No.762.
6-11-79	Meeting with the Washington Association of Counties.
7-3-79	WDF response to the Draft Oil Spill Protection Plan for the lower Columbia River.
9-18-79	WDF submitted to EFSEC an outline of the order of the contested case preferred by the Department.
<sup>28</sup> <del>9-30</del> -79	WDF letter in response to PURPA-V and the BLM-Final EIS.
10-12-79	WDF preliminary list of expert witnesses submitted to EFSEC.
10-19-79	Attended coordination meeting with other state agencies and counties concerning coordination of preparation for the upcoming contested case on Northern Tier.
11-13-79	Attended showing of a film concerning operation of a pipeline lay barge.
11-15 & 11-16-79	Prehearing conference with Northern Tier's representatives and consultants.
11-29-79	Meeting with Dan Steinborn of EPA.

In addition, Department staff filled formal and informal requests for information from Northern Tier's consultants (ERT and OIW), various counties in Washington state, both state and federal legislators and the general public concerning the resources under the Department's jurisdiction which relate to Northern Tier's and TransMountain's proposed pipelines.



STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504

206/753-6600

January 3, 1979

Mr. Nick Lewis  
Energy Facilities Site Evaluation Counsel  
820 E. 5th Avenue  
Olympia, Washington 98504

GS:MLM:mr

Dear Mr. Lewis:

Northern Tier Pipeline Application  
for Site Certification

The Washington State Department of Fisheries is reviewing the current application for site certification submitted by Northern Tier Pipeline Corporation in August of 1978. Our review is continuing on the adequacy and accuracy of this application. We would like to make some preliminary comments on the contents of this application although our review is not at present complete.

The application is exceedingly difficult to review properly since it is not indexed and cross-referenced by fisheries resources and other specific elements of the environment involved. It is conceivable that some of the information which we have felt is missing is located in the document but is unretrievable due to the lack of proper cross referencing. For example, the spawning habits of herring are discussed under the vegetation not the fauna section.

The entire environmental assessment is based on the principle that the resources can be summarized by listing similar habitats and commonly occurring species. While this approach describes the qualitative impacts to be expected, it does not present an adequate quantitative estimate of potential impacts on the fisheries resources and the related economy. In order for the decision makers to make an informed approval or denial of the project, the assessment has to quantify the fisheries resources present as well as calculate the economic value of these resources.

Accurate, current resource harvest statistics and population estimates by geographic area are therefore a very high priority. The application presently contains outdated harvest values, minimal economic data, and no information on harvest of some species for which published data are available. In addition, the application overlooks published population information for Pacific herring in the Straits of Juan de Fuca.

An example of the type of presentation which could be developed for such an assessment is found in the attached letter written to Mr. Allen Zink of Stanford Research Institute on April 4, 1978 concerning economic values of fisheries resources in Puget Sound and its tributaries. An economic analysis similar to the attached is only possible if an adequate inventory of the resource base is presented.

Mr. Nick Lewis

- 2 -

January 3, 1975

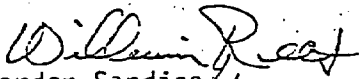
Additional inadequacies in our preliminary review include the use of secondary rather than primary data sources. The accuracy and interpretation of the original data can not be evaluated therefore. The application also contains minimal oceanographic data. Important sections of the Sound such as Admiralty Inlet are not treated at all. Other areas are given only the most cursory treatment. South Puget Sound is simply listed as being similar to Hood Canal oceanographically. An estimate of where an oil spill might go (and therefore what it might do) can be developed only if oceanographic aspects of the environment are covered adequately.

The application does make some strong statements about oil spills and impacts. Statements that oil spills and resultant impacts are a significant potential (p-2-28 and other places) may lull readers into thinking that sufficient environmental information has been presented to predict what these impacts might be. Without a sound inventory the assessment is totally inadequate and statements that an impact potential is significant are nearly meaningless.

We have found other numerous insufficiencies in the present application. Undoubtedly additional inadequacies and inaccuracies will come to light as our review progresses. We felt that the preliminary review revealed such major insufficiencies and omissions that we should communicate this to you as early as possible in the course of our review.

Thank you for your consideration.

Sincerely,

  
Gordon Sandison  
Director

mr

attachment



STATE OF  
WASHINGTON

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DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504

206-753-6770

171

January 3, 1979

Mr. Nick Lewis  
Energy Facilities Site Evaluation Counsel  
820 E. 5th Avenue  
Olympia, Washington 98504

GS:MLM:mr

Dear Mr. Lewis:

Northern Tier Pipeline Application  
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January 3, 1978

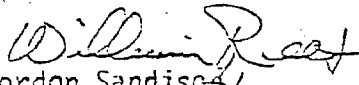
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Thank you for your consideration.

Sincerely,

  
Gordon Sandison  
Director

mr

attachment



STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504

206/753-6500

January 31, 1979

Mrs. Everett Berglund  
1834 West 7th  
Port Angeles, Washington 98362

Dear Mrs. Berglund:

Washington Department of Fisheries Review  
of Northern Tier Pipeline Corporation Proposal

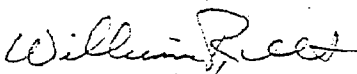
In response to your request for information concerning the Washington Department of Fisheries review of the Northern Tier Pipeline Corporation project, Mr. Frank Haw contacted Mary Lou Mills of Natural Production Division which coordinates the Department's response. As discussed in that conversation, the Department's review of the Northern Tier Pipeline Corporation proposal documents including the Bureau of Land Management Environmental Impact Statement (EIS) is progressing

Information relating to economic value of fish resources was requested from the Department of Fisheries for the preparation of the Bureau of Land Management EIS. We are enclosing a copy of the letter written to Mr. Allen Zink on April 4, 1978 in response to that request. Some of the economic data was included in the Draft EIS. They used the summaries contained in the main body of the April 4, 1978 letter.

Work is continuing on the Northern Tier proposal in order to detail our concerns with the project as accurately as possible. We anticipate meeting the February 26, 1979 deadline for completion of the review of the Bureau of Land Management and will be making specific comments on the content of the document at that time. If you have further questions about the review, please contact Mary Lou Mills (753-0576).

We appreciate your interest and the time you have taken to express your concern with this proposal.

Sincerely,

  
Gordon Sandison,  
Director

mr

Enclosure

cc: Frank Haw  
Mary Lou Mills  
Jim Johnson, AAG

bcc: Earl Finn



STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504

206/733-6600

March 30, 1979

Mr. Donald E. and Ms. Shirley Hermann  
3181 Meadowlands Drive  
Sparks, Nevada 89431

Dear Mr. and Ms. Hermann:

Proposed TransMountain Pipeline  
Facility Terminating at Low Point  
in the Straits of Juan de Fuca

We appreciate your letter of March 15, 1979 concerning the above referenced proposal and share your concern for the fish and shellfish resources which might be impacted by such a project. The Washington Department of Fisheries will be actively participating in the Energy Facility Site Evaluation Council (EFSEC) hearings which will occur for any new energy related proposal in the State of Washington. At present, EFSEC has received no formal application from TransMountain Pipeline Corporation for an oil transshipment terminal at Low Point.

EFSEC is the State agency which will decide if a state permit can be issued for any new energy related facility and, if so, what stipulations that permit should contain to lessen the potential impacts of the construction and operation of the proposed project. Prior to issuance of any approval, EFSEC recommends a proposal to the Governor who then makes the final decision on whether a Washington State approval should be issued.

EFSEC approval is the only Washington State permit needed. EFSEC pre-empts all other State and local permits. The Department of Fisheries will be providing information on the occurrence and value of fish and shellfish resources which might be impacted by either construction or operation of energy related projects in the hearings held by EFSEC to collect information on which to base their decisions, recommendations, and permit stipulations for any energy facility proposals being considered.

In reference to your suggestion that the North Slope crude oil be moved by rail through Canada, the Washington Department of Fisheries would not be involved in the decision-making process on such a proposal. We would be involved if a similar major transshipment plan were proposed in Washington State requiring State approval.

Concerning your plea for assistance in voicing your opposition to the Low Point proposal, there would be several federal permits needed for such a project as

Mr. Donald E. Ms. Shirley Hermann - 2 -

March 30, 1979

well as state approval through EFSEC. Your alternatives for comment would obviously include federal and State Senators and Representatives as well as EFSEC and the Governor here in Washington State. If you wish to participate in the EFSEC hearings, you may find it advantageous to do so through a group. A number of groups have filed for intervenor status in the contested case hearings on Northern Tier's proposal (an oil port and pipeline starting at Port Angeles) and some would probably participate in hearings on a proposal starting at Low Point. Clallam County has also been very active in the present Northern Tier EFSEC proceedings.

Thank you for your letter and for your concern.

Sincerely,

Gordon Sandison,  
Director

mr

cc: Energy Facility Site  
Evaluation Council-Olympia

3181 Meadowlands Drive  
Sparks, Nevada 89431  
March 15, 1979

MAR 21 1979

Gordon Sandison, Director  
Department of Fisheries, Washington State  
Olympia, Washington 98504

Dear Mr. Sandison:

As property owners at Low Point, a geodetic survey marking located some 15 to 18 miles west of Port Angeles on the Straits of Juan de Fuca, we strongly and adamantly oppose the possible construction of an oil port at this location as proposed by Trans Mountain Pipe Line, Ltd.

With reference to the attached newspaper clipping, we sincerely and respectfully advocate and encourage the operation of a rail plan which would not cause adverse problems or restrictions.

Regardless of the relatively small population in the Low Point area, it is an established right of all individuals to protect their property. Notwithstanding our individual rights, every consideration should be given to the welfare and survival of the wildlife, fish and game that would unmercifully be jeopardized by the construction and operation of an oil port at this site.

The almighty dollar speaks loudly and carries untold precedence; however, we are hopeful that, as ordinary citizens and property owners, we still have the right and privilege of protecting and defending our property. Obviously, we have chosen this location because of its beauty, wildlife and general peaceful environment, and it is more than somewhat distressing to think that all this could be destroyed by big business with their unending power and wealth.

Please, where can we turn for understanding, consideration and assistance in our endeavors?

CENTRAL FILES ROUTING SLIP

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NAT. PROD.	
HARV. MGMT.	
RES. & DEV.	
ENG. & CONST.	

Sincerely,

*D. E. Hermann*  
Donald E. Hermann

*Shirley H. Hermann*  
Shirley H. Hermann

Attachment

MAR 21 1979

# Rail plan would end need for oil port

By DAVID HORSLEY  
Olympic correspondent

A British Columbia political leader and a state legislator have devised a plan to ship oil from Alaska by railroad that would eliminate the need for any oil port on the Olympic Peninsula and pipeline across the state to the Midwest.

David Barrett, leader of British Columbia's New Democratic Party, and Sen. King Lysen, D-Seattle, are in Washington, D.C., this week to present their plan to Secretary of Transportation Brock Adams and other federal officials.

Barrett and Lysen suggest con-

struction of 935 miles of new track in Alaska, the Yukon Territory and British Columbia that would connect with existing lines and result in a continuous rail link from Fairbanks to Seattle.

Ten daily unit trains of 900 cars could carry 500,000 barrels of Alaskan crude per day from the Trans-Alaska Pipeline System at Big Delta, southeast of Fairbanks, to Lower Post, B.C., where the oil could be fed into a proposed pipeline to Edmonton, Alberta, according to the proposal.

Lysen said carrying the oil by rail would eliminate any need for shipping Alaskan oil through Washington.

It would scuttle the plans of Northern Tier Pipeline Co. and Trans Mountain Pipe Line Ltd. to build a port and pipeline in this state, as well as the proposal of Kitimat Pipeline Ltd. to construct a similar project in British Columbia.

In explaining the proposal Barrett said 200,000 barrels per day is the total amount of oil that is expected to be handled at an Olympic Peninsula or Kitimat, B.C., oil port — the rest of the North Slope oil will be shipped to California and possibly to Japan.

Thus, the railroad "does provide a promising alternative for moving a major but troubling portion of Alaskan oil without jeopardizing British

Columbia's or Washington state's coastal waters," Barrett said.

Both the Soviet Union and the People's Republic of China have opted for railroads rather than pipelines to move oil from their northern oil fields, Barrett added.

The plan also suggests the rail line could be used to transport liquefied natural gas from Alaska into Washington.

Lysen said by using modern, interlocking tank cars, a train one mile long could be emptied of its contents in just four hours.

The projected minimum cost of the rail line is \$1.5 billion.

Lysen said one aspect of the proposal is that it would open new areas of British Columbia for logging and mining.

"Now there is no north-south railway in British Columbia," Lysen said. "It's virgin territory, like the Old West. With a rail line, the timber and ore can be brought out, while whole new areas for tourism are opened."

According to Barrett, the rail line would create 6,000 new jobs, directly and indirectly, in Canada, and 3,500 new jobs, directly and indirectly, in Alaska.

"It is the way out of environmental and social problems which could delay delivery of North Slope energy," Barrett said, "and it is the way into the North for orderly and productive development."

In addition to Adams, Lysen said he will talk to Washington's Sen. Warren Magnuson and Sen. Henry Jackson about the plan.



STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98501

April 2, 1979

Bureau of Land Management  
700 Northeast Multnomah  
Room 2050 Lloyd Building  
Portland, Oregon 97232

Attention Northern Tier DEIS

Gentlemen:

Review of the Federal Draft Environmental  
Impact Statement for Northern Tier Pipeline  
Corporations Proposed Oil Transshipment  
Facility (April 1979)

The Draft EIS for Northern Tier Pipeline Corporation has been reviewed by the Washington State Department of Fisheries. Our comments follow.

The Draft EIS in general provides insufficient information on the salmon, shellfish, marine fish, and the harvest of these resources in the State of Washington. The information that is contained in the Draft EIS is written and organized in a form designed to be readable for the general public. There is insufficient information however on the very important foodfish and shellfish resources of the State for decision-makers who must make the ultimate decision concerning the proposal. We recommend that the more technical information required by these decision-makers be contained in a technical appendix to the Environmental Impact Statement. This may provide the type of in-depth information required and still maintain a readable document for the general public. It is imperative that the technical information be included somewhere so that informed decisions can be made with full knowledge of the value of the resources involved.

It should be noted that the review presented herein is the first one Department of Fisheries has attempted of the Northern Tier Pipeline Proposal. The Department of Fisheries will be continuing to participate in the State evaluation of this project. Undoubtedly, some issues not addressed in this present review may become evident as the evaluation progresses. This present review does not preclude further additional concerns if they develop.

We have divided our comments into two types. The General Comments which follow next concern a number of broader topics. They cover a number of omissions and/or errors in the text and were organized in this manner to avoid repetitious mention of these issues. The Specific Comments contained herein point out some of textual items to which the General Comments apply.

General Comments: Clams

Commercial clam farming is an important activity in the Dungeness area, in Sequim Bay, Discovery Bay, Dabob Bay, Oakland Bay, Little Skookum Inlet, Totten Inlet, and Eld Inlet. Recreational harvest occurs on public beach tracts in Dungeness, Sequim Bay, Hood Canal from Quilcane to Belfair, Oakland Bay, Totten Inlet, and Eld Inlet. All species of clams, including geoducks but not razor clams, are harvested either commercially or recreationally from intertidal or subtidal beds in or adjacent to these areas.

As with other species, the yearly landings and harvest values (listed in our April 4, 1978 letter) for commercial and recreational harvest throughout the pipeline route should be included in the EIS. Being among the more ~~impact-~~ <sup>?</sup>able species, clams merit particular attention in the EIS.

As with marine species, clams have vulnerable spawn, planktonic larvae and seed. An aspect of their life history of particular note is the fact that native species of clams do not reproduce successfully every year but instead the population is sustained by periodic massive sets followed by a number of years of light setting. A massive kill on any one bed or in all beds in a discrete area could be expected to have long term effects until pollution is removed from the substrate and until a significant natural set occurs. Some intertidal beds could be rehabilitated by cleaning or replacement of the substrate and acquiring seed from shellfish hatcheries, while others such as geoduck beds would be difficult if not impossible to fully rehabilitate.

As with oysters, the duration of toxicity and tainting, the quantified effects of small frequent spills and large catastrophic ones, and the effects of historic spills all need further elaboration. The fact should be pointed out that some of the most intense clam (and oyster) farming occurs in sheltered semi-closed bays and estuaries where flushing is poor and potential impact the most devastating. Specific effects of historic spills in such locations should be discussed. Long lasting construction impacts on intertidal and subtidal clam populations have occurred where substrate has been altered significantly during backfilling operations leading to siltation and smothering of adjacent clam populations and destruction of the habitat within the project area.



General Comment: Crabs

Dungeness crabs are important both commercially and recreationally in the Strait of Juan de Fuca from Port Angeles throughout Admiralty Inlet and recreationally in Hood Canal. During spring and early summer Dungeness crab move into shallow water to molt and to breed. During this part of the year they are commonly found in shallow bays such as Dungeness and Sequim Bays and on the deltas of rivers and large creeks flowing into Hood Canal. Most areas where eel grass is abundant and where the bottom is sand or sandy mud are considered prime habitat during part of the year. During the remainder of the year they are found in deeper water from about 30 to 300 ft.

Red crabs (Cancer productus) are common in both shallow and deep water from Port Angeles throughout Hood Canal and all the bays including Budd Inlet. They are important recreationally but so far not commercially due to their smaller size. Their prime habitat tends to be in rocky and gravelly substrate but they are also found in deep water on mud bottoms.

Any oil spill that coats eel grass, rock or gravel or becomes incorporated in the sediments can be expected to degrade the habitat or reduce the food supply of both species of crabs commonly harvested. Tainting and increased susceptibility to disease merit discussion as well as direct toxicity and smothering of crabs. Harvest rates and values should be listed in the EIS by area.

General Comments: Groundfish

1. Harvest

Puget Sound, the Straits of Juan de Fuca and the North Sound area provide important commercial and recreational harvests of groundfish or bottomfish. Neah Bay, the San Juan Island area and Tacoma Narrows are well known recreational bottom fishing areas. Tacoma Narrows and central Puget Sound in the vicinity of Agate Pass support an intensive fishery for Pacific cod. Recreational effort for bottomfish has been increasing 10-15% each year (Bargmann, 1977).

The types of gear fished commercially and the target species are listed by area in Table 3. The annual harvest figures and dollar values detailed by area in the Appendices of the Washington Department of Fisheries April 4, 1978 letter should be included in the EIS.

2. Life History and Operational Impacts

Several aspects of groundfish life history are worthy of particular note. These species have valuable planktonic eggs and larvae. Many adult groundfish, particularly flounder, sole and lingcod, spend a considerable portion of their time in direct contact with the sediments. They constitute the group of finfish most vulnerable to impact due to change in subtidal sediments. The potential for tainting of these species and increased susceptibility due to the portions of oil spills which sink should be discussed. This discussion should include an historical look at this problem in other areas of catastrophic and/or chronic oil pollution. The potential for impact on the harvest from these effects should be explored along with the effect of the direct curtailment of fishing due to potential contamination of gear.

## General Comments: Herring

### a. Life History

Herring are intertidal to shallow sub-tidal spawners. They deposit their eggs on eelgrass and other vegetation located at tidal elevations from approximately + 3 to - 15 feet. After hatching the larvae are planktonic. Herring are exceedingly important in the food chain in Puget Sound waters. Many species including salmonids feed on herring and other baitfish throughout the Sound.

### b. Commercial Fishery

Commercial fishing for herring is primarily composed of three types. The sac-roë fishery is permitted in northern Puget Sound during spawning when sufficient spawners are present. The fishery is of very short duration and is exceedingly intense. Gill net and purse seine gear is used to harvest sac-roë herring. The second type of fishing which occurs for herring is the bait fishery. The bait fishery is fundamental to recreational salmon and bottom fishing in Washington State. The bait fishery is conducted in Hood Canal and south Puget Sound. Lampara and dipnets are used for this harvest.

A general purpose fishery for herring occurs in Northern Puget Sound in the fall and winter.

### c. Occurrence

Areas of documented herring spawning should be indicated in the Draft EIS. Areas of concern are Sequim Bay, Discovery Bay, Port Townsend Bay, the Port Gamble-Seabeck area in Hood Canal, the area from Quilcene Bay to the mouth of the Duckabush River in Hood Canal, Totten Inlet and Quartermaster Harbor in south Puget Sound.

### d. Operational Impacts

The impact of an oil spill on the herring population should be explained in terms of (1) impact on subtidal and intertidal vegetation utilized by spawning herring, (2) impact on planktonic larvae, (3) impact through the food chain on other fish populations, and (4) impact on the fishery for herring with subsequent ramifications in the recreational and commercial fisheries for other species.

### e. References

Information should be included from the U.S. Fish and Wildlife Service Publication, Puget Sound Herring Surveys Including Observations of the Gulf of Georgia sac-roë Fishery, 1975-1977, John H. Meyer and Robert A. Adair, March, 1978. The 1975 fishery statistical report from Washington Department of Fisheries can be consulted for the total poundage of herring landed in Puget Sound by year from 1935 through 1975 (p. 59).

Hydroacoustic Assessment of Puget Sound Herring, 1972 through 1978,  
Washington Department of Fisheries Technical Report No. 41, by  
Norm A. Lemberg, 1978, lists acoustic surveys for herring in many  
areas adjacent to the preferred pipeline route. A description of  
the commercial fisheries can be found in Progress Report #74, the  
1976 Marinefish Program, (1978) and Progress Report #12, Effects  
of Limited Entry Legislation on Management of Washington State  
Commercial Herring Fisheries, Bob Trumble (1977).

General Comments: Impacts in the Fishery

Statements concerning "impacts" on a given marine or freshwater resource should be as specific as possible. It is insufficient to say that there will be loss of a resource or loss of harvest of a resource. What is the estimated loss and what are the economic implications of this loss? There is economic information in a WDF April 4, 1978 letter (especially in the four Appendices to that letter) to relate individual fishery resources to their landed values. How many pounds of fish would be lost or be unharvested because of an oil spill and what is the value of that resource or harvest?

What could an oil spill mean in terms of lost gear to salmon fishermen, for example, if a spill fouled the gear? What is the average cost of commercial gear of various types?

The statement is made repeatedly that impacts may occur on the salmonid populations in the streams due to construction but will not be noticed in the fishery. Impacts from an individual stream crossing might have impact in the fishery and the number of stream crossings entailed could result in profound effects collectively in the fishery. This is reflected by the dollar value figures developed by the Department of Fisheries and sent to Stanford Research Institute (Mr. Allen Zink, April 4, 1978 letter). The dollar values designated as "river of origin values" in Appendix 2 of the letter to Mr. Allen Zink should be listed in the Draft EIS by watershed. While these are minimal estimates, they do reflect the direct economic gain from the salmon reared in the watersheds crossed by the preferred Northern Tier alternative.

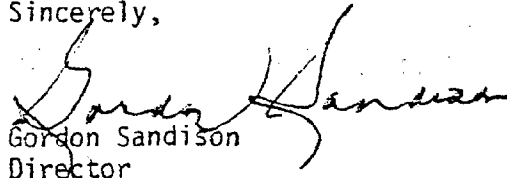
We recommend that the potential economic impact in the fishery be included for some typical sections of the stream. For an example, if a mile of stream supported 100 coho salmon (stream counts have estimated densities of over 3000 salmon/mile on occasion in streams crossed by the preferred route) these fish would produce enough juvenile salmon so that in most cases at least 300 fish would enter the catch as adults 3-4 years later. (A catch to escapement ratio of 3:1 for coho is conservative based on coded wire head tag data collected by Washington Department of Fisheries). Three hundred fish would be worth \$1788.00 to the fishermen if sold at the average 1976 price paid for Puget Sound net-caught coho. Their value as sport caught salmon would be \$7680.00 using the figures from Higgs, 1977. Proper timing of construction and acceptable construction practices are mandatory to avoid impact on salmonid resources of the streams involved.

May 25, 1979

itself. The geographic extent of our concerns span Washington State since the various resources we are charged to protect are influenced by conditions existing over the entire area. The particular effects of these facilities of concern to us are water quality and habitat alterations potentially affecting the abundance, distribution, survival, growth, or harvest of the salmon, marine fish or shellfish resources of our state.

Our review of the application is continuing. More information apparently will be forthcoming on June 15, 1979 in addition to the recent amendments we have received. Issues will be addressed more specifically relative to our concerns as review of these documents continues.

Sincerely,



Gordon Sandison  
Director

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General Comment: Oysters

a. Life History and Occurrence

1. Oysters live in the intertidal area and spawn when water conditions, particularly temperature, are correct. The eggs and the resulting larvae are planktonic for a two to three week period and are extremely sensitive to toxic materials during this stage. Upon reaching the proper stage of development, juveniles settle to the bottom, become attached to some clean hard substrate and continue to grow.

2. Olympia Oysters

There are a very few areas in the State of Washington where the native oyster or Olympia oyster is cultured presently. Due to their more limited occurrence geographically, impact on the culture area in southern Puget Sound may have severe effects on the total Olympia oyster production for the state particularly since there are only scattered stocks and cultured stocks are at a low level. The distinction should, therefore, be made in mapping and impact discussions between occurrence of Olympia oysters and occurrence of the Pacific or Japanese oysters.

3. Spawning Areas for Pacific Oysters

The Pacific or Japanese oyster was originally imported to the U.S. from Japan and much of the Pacific Coast industry was sustained by annual importation of seed from Japan. A few areas of the marine waters of Washington State are warm enough to allow consistent spawning of the Pacific oyster. Dabob and Quilcene Bays in Hood Canal are places where Pacific oysters spawn on a fairly regular basis. This area, therefore, provides the only dependable source of oyster seed for a significant amount of the Pacific oyster culture which occurs throughout Washington State.

b. Operational Impacts

1. Planktonic Stage

Due to the extreme vulnerability of the planktonic state of the oyster life history, an oil spill during this period could have profound affects. Depending on the location of residual material, a continuing affect could occur as long as toxicity persists.

2. Oyster Spat

An oil spill on the substrate used for setting and spat collection or following the setting of the oysters on hard substrate could have toxic and suffocating effects on the oyster spat. Ramifications for the oyster industry throughout the State in the case of a major kill of oyster spat need to be explored. Since Japan is no longer a major source of seed due to economic reasons, the impact of multiple spills or persistent toxic affects on oysters spat or seed beds also needs

discussion. Lost production throughout the State and subsequent economic impact due to lack of seed or degradation of seed producing areas would affect areas far removed from the pipeline route. Quantification of the biological and economic implications of such impacts would give decision makers the information upon which to base sound judgements.

3. Toxicity and Smothering of Adult Oysters

The statement is made in the Draft EIS that there could be sub-lethal affects on adult oysters in the case of an oil spill. Direct toxicity and smothering of adult oysters should also be addressed. The landings of oysters by area (listed in the appendices to the April 4, 1978 letter from Fisheries) belong in the EIS along with the value of the this resource.

4. Toxic Sediment

The statement is made in the Draft EIS that sediments may remain toxic to oysters and other shellfish following a spill. Some estimate as to how long the soluble, toxic fractions would take to disperse or biologically degrade should be included (i.e., how long will sediments remain toxic to shellfish?). Will the toxicity preclude the setting of spat or cause deformity and mortality of juvenile oysters? An estimate of the lost oyster and oyster seed production in worst case spills, at pipeline crossings affecting Dabob Bay, Quilcene, Hood Canal and south Puget Sound should be included in the EIS. This estimate should include both (1) the biological impact on the resource itself and (2) the dollar value of the resource lost immediately and throughout the duration of the effects of the spill. In addition to the toxic effects of oil on molluscs, tainting of the meats may occur. Oyster or clam beds receiving sufficient concentrations of oil or fractions thereof, may be decertified for commercial harvest by the Washington Department of Social and Health Services which is responsible for food protection. Local health authorities may also close recreational digging on beds affected by oil spills either because of tainting or potential toxicity. The persistence of toxicity and tainting needs to be explored quantitatively, therefore.

5. The effect on oysters of usual "clean-up" measures after an oil spill should be discussed. Historic spills such as the Amoco Cadiz which have affected oyster culture areas should be discussed in terms of immediate biological impact, increased susceptibility to disease, natural recovery, effectiveness of clean-up measures, and economic effect of the spills.



General Comments: Salmon

a. Pink Salmon - One species of salmon, pink salmon (Oncorhynchus gorbuscha), merits special mention. Pink salmon are fish which return at two years of age to spawn. There is no spawning at any other age. An impact to a population of pink salmon may be more devastating because other brood years will not overlap to fill in for the lost fish. Note of the unique aspect of pink salmon life history should be made in the EIS as impacts will be potentially greater for this species.

b. Recovery of Salmon Spawning Beds

1. Construction - The statement is made repeatedly in the Draft EIS that construction impacts (i.e., siltation in the spawning beds) will last for one year and will only affect one brood year of salmonids. Heavy siltation in a stream may have effects which last beyond a single year or the next period of high water flows as the Draft EIS states it. Silt may wash out of the upper most layer of gravel and remain in the deeper layers. It may move downstream from the construction site and come to rest in slower moving reaches of the river. These slower reaches in some cases may be gravel beds close to the mouth of the river used by pink and chum salmon. High water flows may be ineffective in moving heavy silt loads in these stretches due to the gradient-width characteristics of the stream. Siltation in salmonid streams has the potential for devastating spawning and rearing areas over a considerable period of time and, in some cases, indefinitely. The EIS should be revised to reflect this.

2. Operational - The statement is made repeatedly that streams will clear rapidly and no residual effects shall be left in the case of an oil spill. We question these statements.

Examples of stream and riverine oil spills should be sought and discussed in the EIS. In particular, we have concerns with oil which might residualize in a stream due to entrainment and incorporation into the banks and substrate. At low flow periods, many gravel bars used by spawning salmon are exposed and would be affected by such oil. The formation and characteristics of "mousse" in a turbulent stream (or at the base of a hydroelectric dam?) should be discussed.

The effect of an oil spill in a stream on saltwater marsh areas is discussed primarily in reference to birds. The tidal channels of some salt marsh areas and the shallow intertidal and subtidal marine areas of the Sound are used heavily by juvenile salmonids, especially pink and chum. They feed heavily on epibenthic organisms such as harpacticoid copepods during this phase of their life history. These fish are therefore vulnerable to direct toxicity (since they frequent shallow water areas) in the case of a spill which found its way to estuarine and/or marine waters. They are also subject to impact due to an effect on the food organisms on which they depend.

c. Water Withdrawal - Water withdrawals are listed for two reasons. One of these is ballasting the empty tankers before they leave the Port Angeles Harbor after unloading. The water intake systems of the ships should be described in the EIS. Of particular concern is the screening of the ship water intakes, the location and the depth of the intakes. These water intakes might have the potential for sucking up fish which are in the area including juvenile salmonids if the intakes are not properly placed or screened. The approach velocity of the intakes should also be listed.

Water withdrawals in fresh water are also listed for hydrostatic testing of the tank farm and pipeline. The screening of these water intakes again should be listed including the approach velocity. The location of the water intakes and design of these structures should be included. The location of the intakes and per cent reduction of stream flow are of interest. Minimal flows at sometimes of the year may preclude use of some water sources.

Mention is made of herbicides to prevent growth of algae inside the pipeline. The type of herbicides and the amount of herbicide to be used should be included in the EIS. The literature available concerning the environmental affect of this herbicide should be listed. Treatment of the water prior to release back to the proposed receiving streams should be listed. How effective is the proposed treatment? Please explain and document the statement that a dilution of 5:1 is required if the bacteriacide is not to produce toxic effects. Explain which species are potentially involved.

The discharge of this water is also of concern. The point of discharge and the mitigative measures to prevent bank and streambed erosion at the point of discharge should be listed. The statement that damage to the environment will not result from a discharge of 6 cfs or less should be explained in detail. The point of discharge, the configuration of the discharge system, and the time of year of the discharge are all important in this regard and should be addressed. It is important to relate the source of the withdrawal and the proposed receiving waters so that fisheries resource agencies can assess the potential for fish disease transmission from watershed to watershed.

## General Comments: Stream Crossings

### a. Cross Section Drawings Needed

Adequate drawings including cross sections of all stream crossings are needed for proper evaluation of the potential impact. These are available for 19 stream crossings (Army Corps of Engineers Seattle District Public Notice 071-OYB-2-004693), but are needed for all stream crossings.

### b. Alternative Techniques

Other types of stream crossing techniques also merit consideration. Various techniques should be included and may be required to minimize impacts on salmon and other fisheries resources downstream. Techniques of interest include tunneling under streams with the pipeline. This is done on other projects, and is listed as a potential means of crossing roads and highways for the Northern Tier Proposal. The method should be discussed for crossing streams.

Another technique which is not discussed at all is aerial crossing of streams by a means of elevated pipeline. This technique may have several advantages. The cuts which are required on slopes of the hills on either side of the stream are not nearly as deep in deep narrow canyons. The amount of earth exposed and the potential for erosion therefore would be much lower from these surfaces. The pipeline might be less likely to suffer avulsion in the streambed. Finally the pipeline could be carried across the stream in a pipe-within-in-a-pipe type configuration. The outer pipe could be sloped to a catch basin located on the downhill end of the outer pipe. The catch basin could be sized to contain the predicted maximum spill in the case of a rupture in the stream crossing.

The possibility of coffer damming within the wetted perimeter of the streambed to minimize siltation should be discussed. The crossing might be accomplished by working in only 1/2 of the streambed at once.

### c. Blasting within Streams

Since some fauna live in the stream all year round (including some species of juvenile salmonids) there is always some potential for mortalities to aquatic life from blasting even with optimal timing. Blasting should not be the preferred technique if other alternatives are feasible.

Blasting in bedrock is mentioned as a potential need. Techniques used for blasting in watershed areas should be the drill and blast method rather than use of shape charges. With drill and blast method the rock is drilled and the charge placed in the drill hole. The percussion from the blast emanates in a narrower band up through the water column. With shape charges placed on the surface of the rock, the percussion would emanate from the blast site at a much wider angle in the water column (essentially 360 degrees from the location).<sup>180</sup> Timing of blasting to avoid periods of intense salmonid use is essential.

### d. Underground Aquifers

Underground aquifers are mentioned in various places in the Draft EIS. The potential for and effect of breaking into an underground aquifer at a stream crossing should be discussed in the Draft EIS. The effects of concern include a percentage of the stream flow entering the aquifer and therefore being unavailable for downstream organisms including salmonids. An increase in

flow in the stream due to an artesian spring type situation from penetrating an aquifer could also have an affect on stream fauna. If the streamflow and the potential for erosion were increased, impact on salmonids could occur. Boring test holes to determine the presence of aquifers at stream crossings should therefore be done.

e. Time Table for Revegetation

Revegetation is mentioned as a mitigative measure both to control erosion and to diminish aesthetic impact from the proposed construction. A time table for revegetation should be included. The duration and time of year of bare earth conditions should be clearly stated for each stream crossing involved and should be minimized.

f. The Number of Stream Crossings

We question the numbers of "Major", "Minor" and "salmonid bearing" stream crossings listed in the DEIS. Table 1 of this letter lists many (but not all) of the streams within the pipeline corridor in Washington State. Table 2 lists most of the streams within the corridor of the "Cross Sound" Alternative. Depending on where within the corridor the pipeline was located, more streams could be crossed. It should also be noted that most of the streams which are not salmon-bearing are tributary to streams which do receive salmonid use.

g. The Yakima River

The pipeline corridor includes an exceptionally fine spawning area for spring chinook salmon (and other salmonids). The pipeline should cross the river downstream of the Cle Elum bridge to avoid this critical area.

h. Measures to control siltation during construction

Because of the potentially devastating effect from siltation in salmon streams and on some nearshore shellfish beds, all efforts should be incorporated into the project to minimize silt in runoff water from construction sites. Such measures include but are not limited to construction during the dry low-flow months, construction and maintenance (including dredging) of sedimentation basins, use of staked straw bales, sandbag impoundments, filter blankets and/or covering exposed earth with plastic to minimize erosion. Spoils from dredging should be placed in retention basins which will allow settling of silt and solids before return flow reaches the stream.

## General Comment: Surf Smelt

### a. Surf Smelt Life History

Surf smelt (Hypomesus pretiosus) are a species of marine fish which spawn intertidally on fine gravel. Maximum spawn intensity occurs on the upper ranges of the intertidal area (close to mean higher high water). Eggs incubate for two weeks or more before hatching. Smelt larvae (like herring and other species) are planktonic for several weeks before metamorphosing into juveniles. The presence of surf smelt spawning beaches in the saltwaters adjacent to the pipeline route should be mentioned in the EIS. Of particular concern are smelt spawning beaches in southern Hood Canal and south Puget Sound. Approximately half of the smelt spawning beaches which have been documented in Puget Sound occur south of Johnson's Point in Thurston and Mason Counties. Approximately 60% of the documented surf smelt spawning beaches occur in the marine area potentially impacted by spills from the primary "Around the Sound" Route.

### b. Impacts from Oil Spills

The types of impacts which are of concern include the direct impacts on smelt eggs which are deposited intertidally, the impact on the sediment or substrate which the smelt require for spawning, and impact on larvae.

#### 1. Incubating Eggs

Since nearshore oil spills in marine waters generally involve heavy deposition and accumulation of petroleum products in intertidal habitats, smelt spawn is a potentially very high impact resource. The impact on eggs would fall into two categories. The first category would be an affect from an oil spill during spawning season when the eggs may be present on the beach. Oiling at this time would have the potential for both suffocation and toxicity to the incubating eggs thus reducing the number of surviving juveniles. A second type of impact on the eggs would arise if oil were mixed in the preferred sediment or substrate of the smelt and subsequent spawning took place. Again, mortality to the eggs might ensue if soluble toxic components of the oil were still present.

#### 2. Substrate

A second type of effect on the sediment or substrate which is of concern would be a change in the substrate character due to the oiling. If sufficient quantities of oil were mixed into the fine loose gravel preferred by the surf smelt, the beach may change in character. For example when some gravel beaches on which a heavy deposit of oil has been weathered to leave only the heavy tars, the beach has taken the character of asphalt paving (for example, the Metula oil spill). In such a case, surf smelt might avoid the beach as a spawning location. Surf smelt eggs which are deposited on an impervious surface are known to experience high mortality due apparently to desiccation during incubation. Since surf smelt populations are basically limited by the presence and extent of suitable habitat, loss of this substrate due to oil spills would have an adverse impact on the population. The time required for substrate restoration through natural processes (or the range of time)

might be estimated for a major spill and should be listed for a typical beach. The vast majority of surf smelt spawners are two years old or less. Localized extinction of spawning populations could occur from beaches being rendered unusable

3. Larvae and Juveniles

Larvae occupy the upper portion of the water column and are therefore vulnerable to impact due to toxicity of oil slicks. The potential impact to planktonic larvae should be discussed.

Juveniles one year or less in age dwell in the near-shore area. Toxic water conditions in this area and potential impacts on their food organisms (plankton) are therefore of concern and should be discussed.

c. References

For documentation of the type and location of beaches used by surf smelt presently, Technical Report Number 42 by Dan Pentilla, 1978 should be consulted. Progress Report # 39 lists juvenile surf smelt food organisms.

Specific Comments

Section 1 - Description of the Proposal

Page 1-3, Col 2

List the capacity of a barrel in gallons and the B.T.U.'s in a gallon so the two tables can be related.

Page 1-7, Col 2

Approximately how many barrels are held by the various sizes of tankers listed in "dwt" (dead weight tons).

Page 1-11, Col 1, para 9

Discuss any vessel anchorage areas in P.A. Harbor relative to the submarine route.

Page 1-14, Col 2, para 4

Will there be any soluble fractions left in the tank roof and bottom drain runoff which will not be separated by the oil-water separators. Estimate on a worst case basis including any impact on Siebert Creeks salmon population.

Page 1-22, Table 1.4-8

There are minor streams in Clallam, Jefferson, Pierce, Thurston, and Mason Counties which should be included.

Page 1-24, Col 2, para 1

Where will the traps be located? Dikes are needed around the trap areas.

Page 1-28, Col 1, para 1

"Major equipment" should include the leak or pressure sensors.

Page 1-44, Col 1, para 1

Boring and casing the pipe should be discussed as a stream crossing method as well as for crossing highways.

Page 1-46, Col 1, para 1

1. Having dredging equipment rest on the bottom is destructive to streambeds. work should be accomplished from the bank, behind coffer dams, etc. See General Comment:Stream Crossings (b. Alternative Techniques)

2. Excavated material should not be stockpiled in the streambed.

Page 1-47, Col 1, para 4

See General Comment:Salmon (c. Water Withdrawals).

Page 1-56, Col 2, No. 4

Funding for salaries for the "environmental inspectors" should be provided to resource agencies which will then hire the personnel. For some highly sensitive areas, several types of inspectors may be needed (fish versus upland game, for example). The authority of these "inspectors" to influence construction should be discussed. They should have the power to stop and/or modify construction as needed.

Page 1-57, Col 1

No. 10 See General Comment:Stream Crossings (e. Time Table for Revegetation).

No. 12 See General Comment:Stream Crossings (c. Blasting Within Streams)

Page 1-57, Col 2, No. 21

The depth of burial of the pipeline at the stream crossing is important information and merits more discussion.

Page 1, Col 2, SOH10

The status of this proposal has changed.

## Section 2 - Description of the Environment

Page 2-11, Col 1 "Slope Instability"

How will the proposed changes in the bluffs at Green Point affect long shore drift and consequently Dungeness Spit? Relate any changes to the fish and shellfish resources and harvest which occur inside Dungeness Spit.

Page 2-13, Col 1, para's 2 and 5

We note with interest that Siebert Creek borders the storage facility. The first sentence in paragraph 5 is incorrect. Since there are salmon in Siebert Creek, there are "significant" freshwater biological resources associated with the facilities.

Page 2-15, Col 2

We note with interest that the currents will always carry spilled oil east either offshore or onshore from Port Angeles.

Page 2-20, Col 1 "Marine Esosystems"

Add a discussion of reproduction including the planktonic larvae stage common to most marine species.

Page 2-21, Col 2

para 5 - The West Coast of Washington State would also be exposed to an increased threat of oil spill and should be included. Offshore commercial



and recreational bottomfish, salmon, crab and shrimping areas might also be involved.

para 6 - List the species of shellfish and areas involved (Appendix 2 of the letter to Mr. Allen Zink of SRI, April 4, 1978). List some of the important marinefish species including halibut (see Appendix 3 & 4 of the April 4, 1978 letter). Mention all net fisheries and areas fished (trawl, gill net, purse seine). The importance of the North Sound commercial salmon fishery should be mentioned. Canadian salmon are taken there. If not harvested (due to an oil slick, for example) a year's harvest may be lost to the American economy. See General Comment: Oysters, Clams, Herring, Smelt, Groundfish, Crabs.

Page 2-22, Col 1, para 1

The statement that fishing intensity and fish populations are directly related is incorrect. Fishing intensity often relates to proximity to good launching ramps, population centers, etc. Large catches obviously may relate to substantial fish populations however low catches may reflect low fishing intensity. Catch per unit effort is a better indicator of population strength. Catch alone does indicate occurrence of the species and can be used to calculate the economic value of the population as presently exploited.

Page 2-37, Col 1, para 4

Neah Bay is an important recreational bottom fishing area. Smelt raking should also be mentioned.

Col 1, para 5

These paragraphs under-rate razor clam digging, an extremely important recreational activity.

Col 2, para 2

North Puget Sound is an important recreational bottom fishing area including sport SCUBA diving.

Page 2-39, Col 2, Table 2.1.1.15-4

Foot note 3 should read "includes all of the designated proportions plus the San Juan Islands, Gulf of Georgia, Port Susan and Saratoga Pass."

Page 2-41, Col 2, Table (no number)

Where is commercial fishing designated?

Page 2-57, Col 1, para 6

WDF will be listing optimum crossing times on a stream by stream basis. We note that N.T.P.C.'s proposed construction period extends from a portion of juvenile salmon out migration into spawning seasons for some salmon which may not be permitted.

Page 2-57, Table 2.1.1.6-1

All salmon bearing waters should be listed as "Major Stream Crossings".

Page 2-57 and following

More streams need discussion due to salmonid resources See General Comment: Stream Crossings (f. The Number of Stream Crossings). Groundwater pockets should be listed on a stream by stream basis. (See General Comment: Stream Crossings, d. Underground Aquifers). We note with interest the number of stream crossings which have steep walled access and refer to the General Comments: Stream Crossings (b. Alternative Techniques and e. Time Table for Revegetation).

Page 2-78, Col 2, para 1

The word "biological" should be changed to "zoological".

para 3 Mention timing of non-resident (or anadromous) salmonids. Mention juvenile rearing and timing of out-migration. Mention the need for sediment-free water for stress free rearing including feeding activities. Mention the need for sediment free gravel. Water percolation through the gravel is needed. See General Comment: Salmon (b. Recovery of Salmon Spawning Beds, 1. Construction).

Page 2-79, Col 1, para 1

"Some western Washington streams..." should read "Most western Washington streams..."

para 5 Unless blocked by impassable barriers, most small streams contain salmon (such as coho) as well as "forage fish".

Page 2-79, Col 2, para 2, Table 2.1.2.6-19

Listing only "selected western Washington salmon bearing streams is highly misleading. Please see General Comment: Stream Crossings (f. Number of Stream Crossings). We consider Table 1 (attached) fairly minimal and yet it is many times longer than the insufficient list in the Draft EIS. Also list the dollar value of the drainages from the "River or Origin Values" listed in Appendix 1 of the April 4 WDF letter to Allen Zink.

Page 2-81, Table 2.1.2.6-18

There are Indian fisheries on more rivers than this Table indicated. The Dungeness, Puyallup, Green-Duwamish, and Cedar runs are fished by Indians in fresh or brackish waters, for instance. WDF Enhancement Projects should be listed. See attached list. Non-treaty terminal gill net fisheries could also be impacted by an oil spill which precluded fishing. This could be handled by adding another column.

Page 2-28, Table 2.1.1.6-19 Foot note 4

The sockeye escapement goal of the Cedar River is 350,000 fish and should be used for capacity of the river.

Page 2-83

The Yakima River has very important spring chinook salmon spawning grounds at the crossing site and merits inclusion (See Stream Crossings, g. Yakima River). The Columbia River and Big Creek and attendant resources should also be included.

Page 2-88, Col 2, para 1

Herring and smelt occurrence, commercial and recreational (for various species) fisheries should be mentioned. Commercial salmon gill netting and purse sein-ing is important in many of these areas. See General Comments:Oysters, Herr-ing, Smelt, Crabs, Clams (Commercial quantities of other clams should be mentioned.)

Page 2-133, Col 2, para 4

Are any of the other pipelines listed functioning at less than full capacity? Could any of these be used to transport some crude?

Page 2-135, Col 2, para 4

See General Comment:Surf Smelt, Herring, Oysters, Crab, Clams, Groundfish.

Page 2-138, Col 1, para 1

See General Comment:Surf Smelt, Herring, Oysters, Crab, Clams, Groundfish.

Page 2-138, Col 1, para 1

Recreational bottom fishing is very important in the Tacoma Narrows area supporting a charter fishery as well as private boaters. Smelt should be mentioned. See General Comment:Oysters.

Page 2-155, Col 1, para 2

Raft culture of oysters is also an available technology. Pen culture of salmon and other species is on-going presently and has growth potential.

Page 2-160, Col 2, para 5

Plans are being implemented to augment artificial salmon production.

### Section 3: Impacts of the Proposal

Page 3-3, Col 2, para 1

Are the engines water cooled with seawater? If so, while running at the dock to pump out the cargo, are the water intakes screened?

Page 3-11, Col 2, para 6

A more complete discussion of the potential impact of a potential slope failure at Green Point. What would occur to the beach and marine life at Green Point (burying under sediment)? What effect could this have on the adjacent and contiguous beaches and the fishery resource nearby (include Dungeness Spit)? If slope failure occurred would turbidity increase in nearshore marine waters and have a subsequent effect on marine life.

Page 3-13, Col 1 para 3

Where will the 1.4 to 3.2 tons of soil per year eroded off the onshore storage facilities go? All efforts should be made to minimize siltation reaching Seibert Creek. This amount of siltation in salmon spawning grounds can have severe impacts if the eroded material settles into the interstices of the gravel. See General Comment:Stream Crossings (h. Measures to Control Siltation) and Salmon (Recovery of Salmon Spawning Beds, 1. Construction).

para 4 How does the predicted 0.01 - 0.02 tons/acre/years post-construction erosion relate to the present rate.

Page 3-14, Col 2, para 1

See General Comment:Salmon (c. Water Withdrawals). What will the temperature charges amount to in absolute figures (a maximum change of how many degrees)? Is there any potential for a temperature block for migrating salmonid adults or increasing the potential for juvenile diseases?

Page 3-14, Col 2, para 7

See General Comment:Salmon (b. Recovery of Salmon Spawning Beds), Stream Crossings (h. Measures to Control Siltation).

Page 3-15, Col 2, para 3

Surf smelt should be included. See General Comment:Impact in the Fishery.

Page 3-15, Col 2 para 6

Please provide a more detailed description of the impacts which would occur to the specific resources of the area due to the severe siltation described for this operation. Sediment analyses are needed. Do they meet EPA criteria for in-water disposal. Timing of such potentially major impact portions of the proposal is critical to avoid juvenile salmon out-migration, for example.

Page 3-18, Col 2, para 1

If in-transit risks actually began, as this paragraph states, when tankers pass Cape Flattery, then there should never have been any off-shore oil spills. There have been spills off-shore historically so this statement is incorrect.

para 2 The estimated time the oil took to reach the furthest extent of the modeled spills and the wind and sea conditions used in the model should be listed.

para 4 The time or range of time crude would take to weather out of "low energy" shorelines should be listed.

para 5 This paragraph is entirely insufficient. Why was the figure 87,000 barrels chosen (does it relate to a projected spill figure)? The 70% reduction of "existing oxygen" (dissolved oxygen or D.O.?) would extend over how large an area? What would D.O. be throughout the extent of the impact and how would this affect fishery resources, their harvest and the economic return to the fishermen and the economy? How long would D.O. remain down? What are the anticipated effects on the resources, harvest, etc. from the "mutagens, carcinogens and other toxic compounds" mentioned? What are these compounds specifically and what concentrations could be expected over what area for how long?

Page 3-26, Col 2, para 2

If bottom contours were lowered below the photic zone or if the organic "soil" of the eelgrass bed were dredged out, regrowth might be impossible or retarded. Discuss relative to the type of impacts anticipated on the eelgrass. Mention the fish species associated with eelgrass. (See General Comment:Crab).

Page 3-28, Col 1, para 3

Include other species (See General Comments:Herring, Surf Smelt, Oysters, Clams, Crab, Groundfish).

Page 3-28, Col 2, para 3

General biological effects might also include a delay in salmon migration and an unnecessary reduction in harvest. Potential impacts should be dealt with in much greater detail (See General Comments:Impacts in the Fishery).

Page 3-29, Col 2, "Plankton"

Mention the larval stages which most marine fish and shellfish species have and their vulnerability.

"Benthic organisms"

The importance of some oyster areas to the rest of the Sound because of their production of seed oysters is worthy of mention, notably Quilcene Dabob Bay (See General Comment:Oysters).

"Fish"

Intertidal breeders (smelt and herring) are high impact species. Avoidance of an oiled area by salmon adults should be discussed.

Page 3-23, Col 1, "Shellfish"

Spill trajectories cover more than just Port Angeles Harbor. Discuss resources accordingly.

Page 3-33, Figure 3.1.7-9

<u>Animal or plant group</u>	<u>Habitat</u>	<u>Comment</u>
Crustaceans	Sand, mud, mixed-coarse, mixed-fine	Mention food organisms (harpacticoid copepods) gammarid amphipods, etc.)
Crustaceans	Sand & eelgrass	Important crab spawning areas
Mollusks	Sand	Razor clams make this habitat extremely important on the coast.
Mollusks	Mud	Oysters could undergo severe mechanical impact
Fishes-Open Water	Eelgrass	Herring spawn would undergo severe "mechanical impact"

Page 3-42, Col 1-2, "Operation Phase"

Vessel anchorage areas in PA Harbor should be discussed. Potential for pipeline rupture due to ships dragging anchor. How deep do the anchors of the largest ships plough given strong seas sufficient to cause the ship to drag anchor? Will there be disruption of the local recreational fishing traffic due to Coast Guard proposed regulations limiting the proximity of small boats to the vessels?

Page 3-48, Col 1 para 4

See General Comment:Impacts in the Fishery.

para 7 Recreational bottom fishing around Neah Bay is important.

Col 2, para 2

See General Comment:Surf Smelt.

Page 3-50, Col 2, para 4

"the loss would be mainly in fishing time". Please revise this to add the economic implications of lost fishing time and potential damage to gear. Also add a comment about underharvest of stocks due to inability of fishermen to fish (See General Comment:Impact in the Fishery). In the case of Canadian stocks, this income could be lost completely when the fish leave U.S. waters. For U.S. fish, unharvested "enhancement" produced - to-be-harvested fish could over spawn on wild fish redds. Over spawning can reduce survival.

para 5 The additional work mentioned to assess impacts on recreational income, commercial and Indian fishermen's income for all species should be included in the Final EIS.

Page 3-51, Col 1, para 3-4

An estimate of the beach clean-up costs of the modeled spills should be included. Miles of various shoreline types can be gotten from Department of Ecology's Coastal Zone Atlas of Washington.

If an estimate of the cost of open water clean-up can be made (based on historic spills, for example), it should be included also. The clean-up costs thus developed should be compared to the liability figures listed.

Para 4-9 CRISTAL seems to be the only liability provision which could cover costs incurred by commercial fishermen since private individuals can apply for this compensation. Is this correct? Would it pay for lost income due to lost fishing time and/or damage to the resource supporting the harvest?

Page 3-6-, Col 1, para 3

See General Comments:Stream Crossings, c. Blasting within Streams

Page 3-60, Col 2, para 2

We note with interest the anticipated problems with slides in areas of slope instability. Since much of the Puget Sound area is listed previously in the document as having slope instability, it is of MAJOR concern to us relative to salmon and near-shore marine species. See General Comments:Stream Crossing (a. Cross Section Drawings Needed, b. Alternative Techniques, h. Measures to Control Erosion).

Where slopes are the steepest, rerouting the pipeline corridor to avoid unstable slopes should be considered. The principle of routing the pipeline through existing corridors may not minimize impacts if the utility in the existing corridors is not one which entails as high a risk of slope failure. The last sentence in the paragraph should be enlarged to include the biological impacts of slides in detail (See General Comment:Impacts in the Fishery).

Page 3-61, Col 2, para 3-4

We note with interest the slope instabilities mentioned. Is there any way the pipeline can be routed around such areas.

Page 3-65, Col 1, para 4

Please explain the revegetation program in greater detail.

Col 2, para 2

We notice that on the average over 3 spills per year from the pipeline are anticipated.

Page 3-67, Col 1, para 4

What would the effect of the described sedimentation be? See General Comment: Impacts in the Fishery, Stream Crossings (b. Alternative Techniques, h. Measures to Control Siltation) and Salmon (b. Recovery of Salmon Spawning Beds).

para 5 See General Comment: Impact in the Fishery.

Col 2, para 2-3

See General Comment: Salmon (c. Water Withdrawals).

Page 3-67

How many miles of stream crossings are entailed in crossing the small tributaries not listed in the DEIS (see attached Table 1).

Page 3-68, Table 3.2.6-1)

What would the estimated sediment load be for alternative stream crossing techniques? How long would the silt load remain high? For those crossings adjacent to salt water, impacts on shellfish and marine fish species should be detailed.

Page 3-72, Col 1, para 3

Construction timing should minimize smothering eggs in the gravel.

Para 4 See General Comments: Salmon (a. Pink Salmon and b. Recovery of the Salmon Spawning Beds), Impacts in the Fishery, Stream Crossings (d. Underground Aquifers).

Page 3-72, Col 2, para 1

See General Comment: Recovery of Salmon Spawning Beds - Operational Impacts.

Para 2 See General Comment: Impacts in the Fishery, Salmon (a. Pink Salmon and b. Recovery of Salmon Spawning Beds).

Para 4 Please detail the impacts involved.

Para 6 Please See General Comments: Salmon (c. Water Withdrawals).

Page 3-73, Table 3.2.6-3

Retitle to indicate freshwater and anadromous species only covered. "Sediment/Remarks": The "worst-case" situation would entail pink salmon. Please see appropriate general comment.



"Oil Spill/Pipeline Rupture" Impact could be high in some salmonid streams. The time frame for duration of effects may be severely underestimated. "Several miles downstream" may also be a severe underestimate. In 1978, a spill at Portland, Oregon affected river beaches almost to the mouth of the Columbia River.

"Oil Spill/Remarks" See General Comments:Salmon (a. Pink Salmon and b. Recovery of Spawning Beds), Impacts in the Fishery.

Page 3-74, Table 3.2.6-4

Add an extra column "Annual Value of Fish produced" (from the MDF-Zink April 4, 1978 letter). List all salmon bearing streams (see attached list of crossings, Table 1). Delay in adult migration and subsequent loss of spawn would seem to be a potential with any of these streams. Add columns for commercial and recreational harvest of salmon. Foot note 2: Spawning area downstream should also be noted since spills and siltation could impact these.

Page 3-75, Col 1, para 2

See General Comment:Stream Crossings (b. Alternative Techniques).

para 5 This paragraph falls far short of estimating "worst case" situation. See General Comment:Salmon (a. Pink Salmon, and b. Recovery of Salmon Spawning Beds) and Impact in the Fishery.

Page 3-75, Col 2, para 5

See General Comment:Salmon (a. Pink Salmon), Impact on the Fishery. Calculate the dollar value of a "short stream segment" (line 12) and include it.

Page 3-75, Col 2, para 5 and Page 3-78, Col 1, para 1

The statement that the entire salmon population of some Hood Canal streams could be impacted completely contradicts the previous statements about there being only small, insignificant, one year unnoticeable impacts. Please note and MODIFY all other statements to conform to this one.

Page 3-78, Col 1, para 6

Since there are over one hundred stream crossings in the State of Washington, (see attached list), the number of instream spills per year in Washington State should be calculated and listed (at the stated rate of 1 spill/65 years/pipeline crossing).

Page 3-78, Col 2, para 1

Interference with commercial fishing may also occur. See General Comment: Impact on the Fishery.

Page 3-78, Col 2, para 2

Several miles may be a severe underestimate. Direct impacts of oil in the sediments and gravel of turbid streams should be discussed. See General Comment:Salmon (b. Recovery of Salmon Spawning Beds, 2. Operational).

Page 3-78, Col 2, para 4

Salmon egg boxes and new "enhancement" facilities should be included.

Page 3-79, Col 1, para 1

Discuss long term sedimentation impact due to steep slope instability. See General Comment:Salmon (b. Recovery of Salmon Spawning Beds) and Stream Crossings (b. Alternative Techniques).

Page 3-79, Col 2, para 1 and 5

Paragraph 1 seems to contradict paragraph 5. If stream crossings are expected to degrade H<sub>2</sub>O quality in Hood Canal for months how can there be No Impacts to the shellfish resources of the marine waters?

Page 3-80, Col 1, para 2

See General Comment:Herring, Smelt, Oysters, Clams, Crab, Groundfish, Impacts on the Fishery. This section is entirely inadequate and needs major revision and enlargement to accurately depict resources and potential losses.

Page 3-84, Col 2, Para 5

What chemicals would be proposed for control of woody vegetation. Are the chemicals cleared for in water use? Discuss the potential and impacts from runoff into the streams and marine waters.

## ALTERNATIVES SECTION

The alternatives section of this EIS lacks sufficient detail to allow decision-makers to weigh the potential environmental implications of the alternatives. Of particular note in this regard is the "Cross-Sound" alternative which involves laying pipe from Port Williams immediately northwest of Sequim across to Midway Island north of Point Partridge and thence across Saratoga Passage and Camano Island to the mainland.

Considering the proponents' recent public statements regarding this alternative, the route, the techniques involved, the risks entailed and the resources at stake should be considered in the same detail as described in this letter for the primary route dealt with by the EIS. More specifically, a list of information which should be included would include (but not necessarily be limited to) the following.

1. Quantified listing of harvest rates, economic values, and potential production of all fishery resources along the proposed alternate route.
  - a) Dungeness crab (Dungeness and Sequim Bays, Kilisut Harbor-Hadlock, Saratoga Passage);
  - b) Subtidal geoducks along or adjacent to the route (in particular, Dallas Bank);
  - c) Clam and oyster farming in Sequim and Discovery Bays. (Discovery Bay has some of the most extensive hardshell intertidal clam beds under cultivation in the State);
  - d) Intensive commercial fishing for salmon (of particular note is the catches of Canadian Fraser River fish made in the area.);
  - e) Spawning herring populations in Sequim Bay Discovery Bays, Port Townsend, Kilisut Harbor, Mud and Hunter Bays (on Lopez Island), Skagit Bay, Dugwalla Bay, and Holmes Harbor;
  - f) Extensive, very productive commercial groundfish harvest area surrounds the proposed alternate route. Trawling, hand-line jigging, trolling, set-net and set-line fishing takes lingcod, Pacific cod, dogfish and other groundfish between Point Partridge and Port Williams, in Port Townsend, Admiralty Inlet and Saratoga Passage-Port Susan;
  - g. Egg, larval "fish" and juvenile rearing grounds for various groundfish including (but not limited to Pacific cod, lingcod, pollack, English sole, rock sole and sand sole;)
  - h. Surf smelt spawning area (Penn Cove, Sequim Bay, Discovery Bay, Kilisut Harbor, Camano Island and other areas);
  - i. Subtidal hardshell clam populations (these occur at various points throughout the area; of particular note are the very extensive commercial beds in Kilisut-Port Townsend);
  - j. Salmon production in the new rivers crossed by the route;
  - k. Sea Urchins (Point Wilson, San Juan Islands).
  - l. Sea Cucumbers and Sea Abalone;
  - m. California mussels and commercial mussel farming (S. San Juans and Penn Cove respectively);
  - n. Soft shell clams (Port Susan);
  - o. Shallow water habitat and river estuaries used extensively by juvenile salmonids;
  - p. Octopus concentrations (Point Wilson, Middle Point, Partridge Point, Dallas Bank)

2. Analysis of the direct impact on the above species due to construction and operational impacts including mortality (adult & larval), tainting, disease susceptibility and harvest curtailment. Quantified assessment of economic implications of these impacts;
3. The location, type and historical failure rate of proposed block valves along the route;
4. The precise location of the pipeline on the most detailed scale of map possible;
5. The techniques proposed for constructing the pipeline including the type of pipe, the casing used, the depth and method of burying the pipe, the post construction configuration of the bluffs at Port Williams and Point Partridge (including the land-slippage potential and subsequent impacts),
6. The projected spill configurations east of Whidbey Island and their subsequent impact on fishery resources;
7. Projected maximum spills and amounts of undetectable leaks from various portions of the line;
8. Any complications entailed in detecting leaks in a submarine pipeline when water pressure outside the line equals flow pressure inside;
9. The potential for failure due to corrosion of the pipeline (internal or external);
10. The potential for failure due to large ships dragging anchor (how deep can the pipeline be buried and how deep would an anchor from a large ship "plow" if such a vessel were dragging anchor?);
11. Response time and clean-up capability which would be maintained in the area.

## MITIGATION

Discuss bonding of the company to cover 1) Restoration of lost habitat and resources, 2) Lost income of any commercial fishermen or fish farmer due to construction or operation, 3) Lost commercial fishing gear due to fouling, 4) Any necessary clean-up and/or removal of equipment following the life of the project, 5) necessary environmental protection actions in the case of bankruptcy.

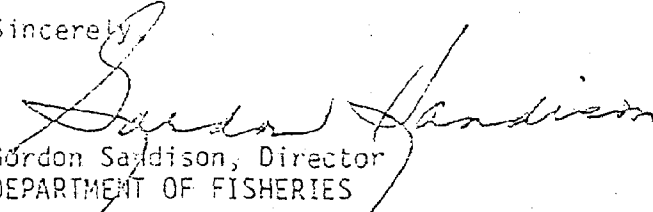
A complete oil spill clean-up contingency plan should be discussed including type, capacity, and location of gear capable of containing and cleaning up accidental spills at any point along the project, location, number, training and drills of clean-up personnel, and estimated response time and projected effectiveness of clean-up measures.

Adequate control of siltation during construction and of accidental spillage during operation is vital if this state's fishery resources are to be maintained. Several mitigative measures are mentioned in the text of this letter in other "General Comments". Additional measures may be developed on a stream by stream basis and presented as the State evaluation process proceeds.

Map Addendum: The Map Addendum has a number of omissions and inaccuracies. We strongly recommend that the information be reviewed using Department of Fisheries publications.

We appreciate the opportunity to comment and look forward to working further with any oil transshipment proposals to ensure adequate protection of Washington's valuable foodfish resources and harvests.

Sincerely,



Gordon Sandison, Director  
DEPARTMENT OF FISHERIES

cc: GFM (Mike Mills, MS-AL01-6)  
NMFS  
USFWL  
Game  
DOE  
Washington State Association of Counties  
EFSEC

Table 1. River and Stream Crossings Entailed in the Northern Tier Pipeline Project (around the Sound routes) \*

<u>Stream</u>	<u># in stream catalog</u>	<u>Tributary to</u>	<u>Salmon use</u>
Siebert Creek	173-18		coho (chum)
Pederson Creek	163-18	McDonald	(coho)
McDonald Creek	160-18		(chin)-coho-pink-chum
Unnamed	162-18	McDonald	
Unnamed	161-18	McDonald	
Matriotti Creek	21-18	Dungeness R.	(coho)(chum)
Bear Creek	30-18	Dungeness R.	coho (chum)
Dungeness River	18-18		Chin-coho-pink-chum; below hatchery water intake
Highland Ditch	37-18	Dungeness R.	Unknown; above natural anadromous fish use
Johnson Creek	301-17		Unknown; above impassable cascades
Unnamed	300-17		Unknown; above impassable cascades
Unnamed	299-17		None; above impassable cascades
Unnamed	297-17	299	Unknown; above impassable cascades
Unnamed	298-17	299	None; above impassable cascades
Dean Creek	293-17		(coho) (chum) impassable cascades in locale
Jimmy Come lately Creek	285-17		coho-chum
Unnamed	249-17	Salmon Cr.	(coho)(chum)
Salmon Creek	245-17		coho-chum
Unnamed	253-17	Salmon Cr.	Unknown
Unnamed	254-17	253	Unknown
Unnamed	248-17		Unknown
Unnamed	247-17		Unknown
Snow Creek	219-17		coho-chum

Table 1. (continued)

<u>Stream</u>	<u># in stream catalog</u>	<u>Tributary to</u>	<u>Salmon use</u>
Unnamed		Lake Leland Leland Creek	
Unnamed	197-17		(coho)
?	118-17		
Little Quilcene R.	76-17		chin-coho(pink)-chum
Big Quilcene R.	12-17		chin-coho-pink-chum; below federal hatchery
Unnamed	11-17		unknown
Unnamed	7-17		Unknown
?	10-17	7	
?	9-17	7	
?	8-17	7	
?	5-17		
Spencer Creek	4-17		coho-chum; in the area of impassable cascades
Marple Creek	1-17		coho-chum; in the area of impassable cascades
Jackson Creek	2-17	Marple Cr.	None; in the area of impassab cascades
Turner Creek	559-16		(coho)(chum)
Dosewallips R.	442-16		chin-coho-pink-chum
Unnamed	443-16	Dosewallips R.	(coho)(chum) in the area of impassable cascades
Unnamed	438-16		coho-chum
Duckabush River	351-16		chin-coho-pink-chum; chum egg box site in the vicinity
Unnamed	352-16	Duckabush R.	
McDonald Creek	349-16		coho-chum; above 2 impassabl cascades
Fulton Creek	332-16		coho-chum; above chum egg box site
?	331-16		above impassable falls
Unnamed	327-16		none; above impassable falls



<u>Stream</u>	<u># in stream catalog</u>	<u>Tributary to</u>	<u>Salmon use</u>
Schuerer Creek	326-16		coho-chum; in area of impassable falls and cascade
?	328-16	Schaerer Cr.	
Unnamed	325-16		None; above impassable falls
Wakotickeh Creek	318-16		coho-chum; above impassable cascades
Hamma Hamma River	251-16		chin-coho-pink-chum
John Creek	253-16	Hamma Hamma R.	coho-pink-chum; above chum egg box site, impassable falls in locale
Unnamed	254-16		Unknown; impassable cascades in locale
Jorsted Creek	248-16		coho-chum; above impassable cascades and falls
?	249-16	Jorsted Cr	above impassable cascades
Eagle Creek	243-16		coho-chum; above chum egg box site, above impassable cascades
Unnamed	246-16	Eagle Cr.	none; above impassable cascades
Lilliwaup Creek	230-16		(chin)-coho-chum; above impassable cascades
Little Lilliwaup Cr.	228-16		coho-chum; above chum egg box site
Sund Creek	226-16		coho-chum; above impassable cascades
Miller Creek	225-16		coho-chum; above passable falls
Clark Creek	224-16		coho-chum; above impassable cascades
Finch Creek	222-16		chin-coho-pink-chum; impassable cascades in locale; above Hoodspout Hatchery water intake
Skokomish River	1-16		chin-coho-pink-chum; George Adams Hatchery water intake on Purdy Cr. which is tributary to Skokomish River below pipeline crossing

Table 1. (continued)

<u>Stream</u>	<u># in stream catalog</u>	<u>Tributary to</u>	<u>Salmon use</u>
Weaver Creek	6-16	Purdy Cr.	coho-chum; see comments above
Goldsborough Creek	35-14		chin-coho-chum
Coffee Creek	36-14	Goldsborough Cr.	coho
Gosnell Creek	29-14	Mill Cr.	(chin)-coho-chum; flows into Isabella Lake of which Miller Cr. is outlet
Little Creek	21-14	Skookum Cr.	coho-chum
Skookum Creek	20-14		(chin)-coho-chum
Kennedy Creek	12-14		(chin)-coho-chum; above chu egg box site
Perry Creek	1-14		coho-chum; above impassable falls
McLane Creek	138-13		coho-chum
Unnamed	142-13	McLane Cr.	coho(chum)
Black River			Inlet to Black Lake; intake for Percival Cove Pen rearing and Percival Creek are below pipeline crossing
Salmon Creek	-13	Black River	See above
Unnamed	40-13	Deschutes River	Coho; inlet for Offitt Lake and tributary of Deschutes R.; intake for Deschutes spawning facility is below
Deschutes River	28-13		chin-coho(chum); intake for Deschutes spawning facility is below
?	46-11	Yelm Cr.	
Yelm Creek	43-11	Nisqually R.	coho-chum
?	47-11	Yelm Cr.	
Yelm Ditch	--	Yelm Cr.	
Centralia Canal	--		
Nisqually River	8-11		chin-coho-pink-chum-sockeye

<u>Stream</u>	<u># in stream catalog</u>	<u>Tributary to</u>	<u>Salmon use</u>
Murray Creek	50-11	Nisqually R.	(coho)(chum)
Unnamed	24-11	Lacamas Cr.-Nisqually R.	(coho)(chum)
Lacamas Creek	22-11	Muck Cr.-Nisqually R.	coho-chum
South Creek	28-11	Muck Cr.-Nisqually R.	(coho)(chum)
Unnamed	595-10	Puyallup R.	unknown
Puyallup River	21-10		chin-coho-chum-pink
Fiske Creek	596-10	Puyallup R.	coho-chum
Unnamed	415-10	Voight Cr.	coho(chum); above impassabl cascades
Coplar Creek	417-10	Voight Cr.	coho(chum); above Puyallup Hatchery intake
Voight Creek	414-10	Carbon R.	chin-coho-pink-chum; above chum egg box site, above hatchery intake
Carbon River	413-10	Puyallup R.	chin-coho-pink-chum
Wilkeson Creek	432-10	South Prairie Cr.	chin-coho-pink(chum)
South Prairie Creek	429-10	Carbon R.	chin-coho-pink-chum
White River	31-10	Puyallup R.	chin-coho-pink-chum
Bosie Creek	57-10	White R.	coho(chum)
Newaukum Creek	14-9	Green R.	chin-coho-chum
Coal Creek	126-9	Fish Lake	?
Deep Creek	142-9	Deep Lake	?
Green River	1-9		chin-coho-chum; Green River Hatchery water intake is on Soos Creek which is a trib- utary to Green R. below pipe line crossing
Cedar River	299-8		chin-coho-sockeye; above sock eye and chum egg boxes
Walsh Lake Diversion	341-8	Cedar R.	coho(sockeye)
Carey Creek			
?		Carey Cr.	

Table L. (continued)

<u>Stream</u>	<u># in stream catalog</u>	<u>Tributary to</u>	<u>Salmon use</u>
?	407-7	Deep Cr. Raging R. Snoqualmie R.	Above impassable cascades
?	406-7	Deep Cr. Raging R. Snoqualmie R.	Above impassable cascades
?	402-7	Deep Cr. Raging R. Snoqualmie R.	Above impassable cascades
Unnamed	399-7	Deep Cr. Raging R. Snoqualmie R.	Above impassable cascades
Raging River	384-7	Snoqualmie R.	chin-coho-pink(chum)
?	408-7	Raging R.	
Unnamed	469-7	S.F. Snoqualmie R.	None; possibility of cross 4 tributaries
Unnamed	475-7	S.F. Snoqualmie R.	None; possibility of cross 4 tributaries
Unnamed	483-7	S.F. Snoqualmie R.	None; possibility of cross 4 tributaries
Boxley Creek	485-7	S.F. Snoqualmie R.	None; possibility of cross 2 tributaries
S.F. Snoqualmie River	467-7	Snoqualmie R.	None
Unnamed	492-7	S.F. Snoqualmie R.	None
Unnamed	493-7	S.F. Snoqualmie R.	None
Unnamed	494-7	S.F. Snoqualmie R.	None
S.F. Snoqualmie R.	467-7	Snoqualmie R.	None
Wood Creek	496-7	S.F. Snoqualmie R.	None
Alice Creek	497-7	S.F. Snoqualmie R.	None
Rock Creek	501-7	S.F. Snoqualmie R.	None
Harris Creek	502-7	S.F. Snoqualmie R.	None
Carter Creek	504-7	S.F. Snoqualmie R.	None
Hansen Creek	505-7	S.F. Snoqualmie R.	None
Humpback Creek	512-7	S.F. Snoqualmie R.	None
Ollalie Creek	514-7	S.F. Snoqualmie R.	None

<u>Stream</u>	<u># in stream catalog</u>	<u>Tributary to</u>	<u>Salmon use</u>
Unnamed		Keechelus Lake Yakima River	
Meadow Creek		Keechelus Lake Yakima River	
Unnamed			
Yakima River			Spring chinook spawning and rearing between Easton and CleElum
Cabin Creek		Yakima River	
Big Creek		Yakima River	
Little Creek		Yakima River	
Reeser Creek		Yakima River	
Wilson Creek		Yakima River	
Naneum Creek		Yakima River	
Coleman Creek		Yakima River	
Cooke Creek		Yakima River	
Trail Creek		Yakima River	
Tekison Creek		Columbia River	
Columbia River @ Crescent Bar i.e. above Priest Rapids			coho-spring chinook-fall chinook
Unnamed Canal		Columbia River	crosses various canals numerous times
Rocky Ford Creek		Moses Lake	
Crab Creek ?			
Canal			
Tributaries to			
Inlet to Sprague Lake			
Unnamed Creek			
Unnamed Creek			
Unnamed		Downs Lake	

Stream                      Tributary to

Unnamed                      Connects Downs and Williams Lakes

Unnamed

Unnamed

Unnamed

Unnamed                      Bonnie Lake

Unnamed                      Bonnie Lake

Unnamed                      Bonnie Lake

Squaw Creek

Unnamed Creek              North Pine Creek

North Pine Creek

Unnamed                      Numerous creeks between North Pine Creek

and state boundary which are crossed.

Table 2. River and Stream Crossings Detailed in the Cross Sound Alternative

<u>Stream</u>	<u>Catalog #</u>	<u>Salmon use</u>	<u>Tributary to</u>
Siebert Creek	173-18*	coho(chum)	
McDonald Creek	160-18*	(chin)-coho-pink chum	
Unnamed	24-18	(coho)	Mariotti Cr.
Mariotti Creek	21-18*	(coho)-chum	Dungeness River
Dungeness River	18-18*	chin-coho-pink-chum	
Unnamed (Hurd Creek)	28-18	(coho)	Dungeness River
Cassalery Creek	15-18	(coho)(chum)	
Gierin Creek	4-18	(coho)(chum)	
Unnamed	5-56	unknown	
Unnamed	56-6	unknown	
Unnamed	2-6	unknown	
Stillaguamish River	1-5	chin-coho-pink-chum	
Church Creek	19-5	unknown	Stillaguamish River
?	20-5	unknown	Church Creek
?		unknown	Sunday Lake
Unnamed	130-5	unknown	Armstrong Creek
Harvey Creek	131-5	coho	Armstrong Creek
H.F. Stillaguamish	135-5	chin-coho-pink-chum	Stillaguamish River
Unnamed	320-5	unknown	S.F. Stillaguamish River
Unnamed	354-5	none	S.F. Stillaguamish River
Unnamed	357-5	coho	S.F. Stillaguamish River
Little Pilchuck Cr.	146-7	coho(chum)	Pilchuck River
Star Creek	153-7	(coho)	Little Pilchuck Creek
Unnamed	151-7	coho	Little Pilchuck Creek
Stevens Creek	147-7	coho	Little Pilchuck Creek

\*Also crossed by the "Round the Sound" route although possibly in a different location on the stream or river.

Table 2. (continued)

Stream	Catalog #	Salmon use	Tributary to
Pilchuck River	125-7	chin-coho-pink-(chum)	Snohomish River
Unnamed	126-7	coho(chum)	Pilchuck River
French Creek	184-7	coho	Snohomish River
Unnamed	186-7	coho	French Creek
Unnamed	188-7	unknown	unnamed-186
Skykomish River		chin-coho-pink-chum	
Riley Slough	818-7	coho(chum)	Skykomish River
Peoples Creek	236-7	coho	Snoqualmie River
N.F. Cherry Creek	243-7	chin(chum)(pink)	Cherry Creek
Cherry Creek	240-7	chin-coho-pink(chum)	Snoqualmie River
Tolt River	291-7	chin-coho-pink(chum)	Snoqualmie River
Griffin Creek	364-7	chin-coho-pink(chum)	Snoqualmie River
Tokol Creek	440-7	chin-coho(pink)	Snoqualmie River
Brockway Creek	464-7	none	Snoqualmie River
Tate Creek	529-7	none	N.F. Snoqualmie River
N.F. Snoqualmie River	527-7	none	Snoqualmie River
N.F. Snoqualmie River		none	Snoqualmie River

S.F. Snoqualmie River is the last crossing on the around the sound route before joining the cross sound alternative route just east of North Bend





STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504

206/753-6600

May 25, 1979

Energy Facility Site Evaluation Council  
820 East 5th Street  
Olympia, Washington 98504

Attention Jon von Reis, Administrative Law Judge

Statement of Position Relative to  
Northern Tier, Cause 762

In response to the request and requirement issued on May 8, 1978 by John von Reis, Administrative Law Judge presiding over the EFSEC Northern Tier contested case hearings, the Department of Fisheries herewith submits the following statement of position. Our position concerning the Northern Tier Proposal is based on our statutory authority in the State of Washington. RCW 75-08-012 states in part, "It shall be the duty and the purpose of the Department of Fisheries to preserve, protect, perpetuate and manage the foodfish and shellfish in the waters of the State". Under this RCW, it is further the duty of the Department to "seek to maintain the economic well-being and stability of the commercial fishing industry in the State of Washington." In order to protect these resources from impacts due to projects in Washington's waters, RCW 75.20.100 states that plans for projects utilizing Washington waters shall be submitted to the Department of Fisheries and Game. An Hydraulics Project Approval including specifications for the proper protection of fish life and signed by the Directors of the Departments of Fisheries and Game shall be obtained by proponents of such projects. The EFSEC contested case hearing and the EFSEC documents which result from it may serve as the sole Washington State Permit required for the Northern Tier Pipeline Corporation proposed project. These will function in lieu of the review of plans and issuance of a permit for acceptable projects by the Departments of Fisheries and Game normally required for a project of this sort under RCW 75.20.100. The EFSEC contested case hearings and the EFSEC documents produced as a result therefore represents the primary means open to the Department of Fisheries to fulfill the statutory obligations entailed in RCW 75-08-012.

We seek to protect the foodfish resources and their associated harvests which could be impacted by the proposed project in Washington State. If the project is deemed necessary, we will seek the alternatives, relating to all phases of the proposal (including routing, design, pre-project activities, construction, operation, demobilization and restoration) that eliminate, mitigate, or minimize adverse impacts in our area of responsibility. All facilities of the proposal are of concern to us including delivery systems to Port Angeles, the unloading facilities, the tank farm and the pipeline

*Miller*



STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504

206/753-6600

July 3, 1979

Oregon Department of  
Environmental Quality  
N.W. Region  
P.O. Box 1760  
Portland, Oregon 97201

Attention Mr. E. Bruce Sutherland

Gentlemen:

Draft Oil Spill Protection Plan  
for the Natural Resources of the  
Lower Columbia and Willamette  
Rivers by the Oregon Department of  
Land Conservation and Development

The Department of Fisheries has reviewed the above-referenced document. We appreciate the effort which has gone into documenting the resources indicated and developing the plan presented.

We have photo copied most of the charts included in the draft plan and marked recreational fishing areas in red and commercial gill net drifts in blue. The blue areas do not necessarily indicate separate maintained drifts. One or more drifts may be used in each of the lines indicated, fish stocks and seasons permitting.

We have several comments about the proposed plan as outlined. The plan provides little protection for the mouths of several very important salmon producing tributaries on the Washington side. For the areas which are protected, booms seem to be organized to protect the areas only on the ebb tide not the flood tide. Since the Columbia undergoes flow reversal throughout a considerable portion of the area involved in the plan, sensitive areas would need protection on both tides.

The rivers having runs of anadromous fish are listed as having a seasonal priority only for fall and winter, presumably for the protection of adult salmonids. The life history stage most vulnerable to impact from direct toxicity would be juveniles. Spring may need a priority listing for protection of out-migrating smolts. Rivers to which this comment applies include the Elochoman, Abernathy, Washougal, Skamokawa and the Lewis.

Our specific comments follow.

Page 33, RM 6-10, Baker Bay, Chinook River  
Chum salmon are cultured at the Sea Resources Hatchery and spawn in the river. The hatchery also releases chinook salmon.

July 3, 1979

Page 33, RM 6-10, Baker Bay, Chinook Point  
What hatchery is located at Chinook Point?

Page 34, RM 6-15, Open water area  
Gill netting for salmon occurs in more than just the Ship Canal.  
Though shallower and more difficult to fish, the Washington side  
of the river in this area is fished when open.

Page 35, RM 19-23, Deep River  
Chum salmon should be listed.

Page 37, RM 33-35, Skamakowa  
Chum salmon should be listed. A seasonal priority is needed for  
winter for adults.

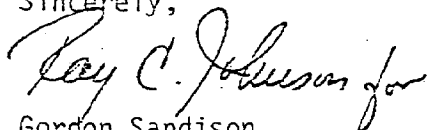
Page 39, RM 67-68, Cowlitz River  
No booms are listed for the mouth of the Cowlitz River.

Page 40, RM 73, Kalama River  
No booms are listed for the mouth of the Kalama River despite the  
fact that the river angles upstream at the confluence with the  
Columbia.  
The area of the mouth of the Kalama is a popular sport fishing  
location.

Page 41, RM 87, Lewis River  
Booms are not listed for the mouth.

Thank you for the opportunity to comment on this document. We look forward to  
seeing the final document. If there are any questions concerning our review,  
please contact Mary Lou Mills (753-0576).

Sincerely,



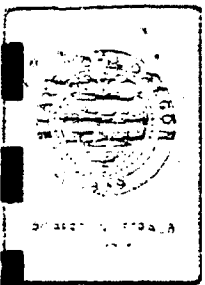
Gordon Sandison,  
Director

mr

Attachments

cc: Ecology  
Game

*ATTN: Mr. N. ...*



# Department of Environmental Quality

522 SOUTHWEST 5TH AVE. PORTLAND OREGON

MAILING ADDRESS: P.O. BOX 1760, PORTLAND OREGON 97207

CODED

JAN 25 1979

January 23, 1979

RECEIVED CENTRAL FILES

JAN 25 1979

Gentlemen:

The Department of Environmental Quality, with grant funds from the Department of Land Conservation and Development, is embarking on a study of the resources on the lower Columbia River which would be vulnerable to oil spill damage. A general outline of the program, the tasks to be performed, and a time schedule are attached for your information.

We encourage your participation in this project to insure that your particular interests are considered, and welcome any information you may have on vulnerable resources or other aspects of the study. A draft report is scheduled for the middle of April and a copy will be sent to you for review.

If you have any questions or have information you wish to contribute, please feel free to contact the Department of Environmental Quality at 229-6021

Sincerely,

G. Bruce Sutherland  
Aquatic Biologist  
Northwest Region

GBS:mjb

Attachments

<input checked="" type="checkbox"/>	DIRECTOR
<input type="checkbox"/>	ASST. DIR.
<input checked="" type="checkbox"/>	NAT PROD <i>10/8</i>
<input type="checkbox"/>	HARV MGMT
<input type="checkbox"/>	RES & DEV
<input type="checkbox"/>	ENG & CONST
<input type="checkbox"/>	OTHER

ATTACHMENT A

WORK PROGRAM

WORK PROGRAM FOR A RESOURCE PROTECTION PLAN FOR THE LOWER COLUMBIA RIVER/IDENTIFICATION OF RESOURCES VULNERABLE TO OIL SPILLS

I. INTRODUCTION:

This study is to identify vulnerable resources which are especially subject to oil spill damage on the lower Columbia River. The study will identify particularly vulnerable sites, oil recovery sites, and look at resource agencies' ability to respond. The emphasis of the study will be on refined oil products entering on the Columbia and crude oil unloading at the proposed General American Transportation Corporation (GATX) petroleum off-loading terminal at Port Westward, and the Cascade Energy Refinery at Rainier.

The importance of the lower Columbia River to the economy of the northwest is enormous, including navigation and commerce, sports and commercial fishing, and other recreational activities. It is a major migration route for salmon and a part of the Pacific Flyway. It is essential to protect the habitat and refuge for numerous forms of wildlife. The disruption caused by an oil spill on the lower Columbia River could have long-term effects on the entire ecosystem of the river and estuary, and especially on several species of endangered waterfowl.

There would also be short-term effects on the beaches, wetlands and shorelands of the estuary, as well as on the water quality which could impact some cities and industries along the river. Hydrocarbon release and debris disposal would have short-term effects on air quality. Public safety could be endangered if the spill involved a highly volatile substance.

The study will assist the DEQ's response to oil spills and the state's site evaluation capabilities of present and future facilities on the Lower Columbia River. It will also provide the DLCD and DEQ with an analysis of current response and decision-making capabilities as well as a model for spill response for other coastal areas.

The study is an allowable CEIP use under 15 CFR 931.33(a)(2)(i).

II. SCOPE OF SERVICES:

For a grant amount not to exceed \$10,930, the DEQ shall perform the following services:

A. Work Program:

Task 1

Identify, map (sketch maps) and rank by priority, vulnerable resources in the study area. Designate specific areas for

protection, and determine how tides, currents, flows and seasons will affect their vulnerability to oil spills. The review of vulnerable resources should include the following as appropriate: fish and wildlife habitats, (wetlands, marshes, nurseries, breeding grounds, nesting areas, shellfish areas, fish migration routes, endangered or threatened species and plants, reproduction and rearing areas, wildlife concentration areas,) hatcheries, recreational and community facilities, refuges, water supply intakes, archaeological sites, and areas sensitive to human disturbance.

Consideration should also be given to seasonal habitats use (over wintering areas, major rest stops, feeding stops and staging areas).

The study area shall be from Columbia River mile 0 to River mile (Camas). Special attention should be paid to the Columbia River Estuary from mile 1 to mile 24-25 (Harrington Point).

The identification of vulnerable resources in the study area should be based in part, on an appropriate review of the following studies:

- 1) Nature Conservancy. Oregon's Natural Areas, 1977;
- 2) Pacific Northwest River Basins. Columbia-North Pacific Region Comprehensive Framework Study, 1971;
- 3) U. S. Army Corps of Engineers. Columbia River and Tributaries Review Study/Reach Inventory Columbia River Mouth to McNary Dam;
- 4) June Lindsted-Siva. Oil Spill Response Planning for Biological Sensitive Areas in Northern Puget Sound Region. Atlantic Richfield Company (August 1978);
- 5) U.S. Coast Guard. Evaluation of Oil Clean-Up Capabilities on the Columbia River Basin System (November 1978);
- 6) CREST, Columbia River Estuary Inventory of Physical Biological and Cultural Characteristics (1978)
- 7) CREST, Columbia River Estuary Marina Study (1978)
- 8) CREST Management Unit Plans; and
- 9) Local comprehensive and port plans.

## Task 2

Suggest suitable methods of protective and clean-up response measures to oil contamination of those identified vulnerable areas, including guidance on access points, potential recovery sites, where oil containment booms should be placed, and the use of other clean-up and protection methods and measures in the identified areas (such as low pressure water flushing,

temporary sand berms, oil absorbent booms, skimmers, steam cleaning, the control of the use of chemicals and dispersants, when to cease clean up operations, the sediment use removal etc.) as well as relevant information on the implications of extreme climatic conditions, seasons, tides, flows and the significant impacts of specific petroleum products (gasoline, distillate fuel, Bunker C type fuel oil, etc.) on the identified resources.

### Task 3

Identify and include information gained from Task 2 on sketch maps, (for examples, important access points, potential booming places, nearby disposal sites, potential oil containment and recovery areas, temporary sites for sand berms, etc.).

### Task 4

Suggest, if necessary, coordination mechanisms, data needs, and technical improvements that may improve response efforts to protect vulnerable resources.

### Task 5

Prepare a draft report including sketch maps on Tasks 1-4 for resource agency and public review to determine areas of concern, their priorities, and response capabilities. Agencies and organizations to be included are listed in II. Scope of Services, Part B.

### Task 6

Conduct an appropriate on-site survey of the study area where questions remain on the feasibility of protection, clean-up measures or on the use for possible oil recovery or disposal.

### Task 7

Analyze information gathered and obtained from Tasks 1-6. Develop a final Resources Protection Plan, including final mapping of each river section, delineating the priority ranking of resources, suggested protective and clean up measures, potential recovery sites according to season, tides, flows, etc., and nearby disposal sites.

Northern Tier - EFSEC

Contested Case Hearings

Order of topics preferred by Fisheries

September 18, 1979

- 1) Presentation of contestants case before our case
- 2) Stream Crossings
  - a) Resources present
  - b) Construction practices
  - c) Operational Impacts
  - d) Mitigative measures (including design modifications)
- 3) NPDES Permits
  - a) Eastern Washington
  - b) Western Washington
  - c) Puget Sound
- 4) Offloading facility and tank-farm
  - a) Resources
  - b) Construction
  - c) Operational Impacts
  - d) Mitigative measures
- 5) Puget Sound Crossings
  - a) Ediz Hook to Green Point
    - 1) Resources
    - 2) Construction practices
    - 3) Operational Impacts
    - 4) Mitigative measures
  - b) Port Williams to Whidbey Island
    - 1) Resources
    - 2) Construction practices
    - 3) Operational Impacts
    - 4) Mitigative measures





STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504  
Mail Stop AX-11

September 28, 1979

MEMORANDUM

TO: Monica Jenkins, Office of Financial Management

FROM: Gordon Sandison, Director, Department of Fisheries *WR*

SUBJECT: Comments on Final BLM Environmental Impact Statement for  
Crude Oil Transportation Systems and on the U.S. Department  
of the Interior "Title V" Pipeline Report

We have reviewed the above-referenced document and have the following comments. We understand that the purpose of the comment period on the Final EIS is to solicit additional comments upon which a final Department of Interior report will be based. This report, in turn, will be submitted to the President of the United States for approval of one or more alternate proposals.

We first request that the need for and cost effectiveness of any pipeline proposed for Washington State be weighed carefully. If an oil terminus must be constructed in Washington State, our resources will be exposed to high potential impacts though Washington State will benefit minimally. Should one or more proposals originating in Washington State be approved, we strongly urge that the maximum flexibility be permitted to find the most environmentally sound route and construction practices for building the Washington State portion.

We will be considering this issue through the one-stop permit system established here in Washington State. The Energy Facility Site Evaluation Council (EFSEC) is processing an application submitted by Northern Tier Pipeline Corporation. Any other new pipeline or energy related facility such as Transmountain, would also have to apply to EFSEC for approval of the Washington portion of the project. The state resource agencies, including the Department of Fisheries, will be participating in the EFSEC contested case hearings on proposals. The route chosen, alternate routes, construction practices, engineering, risk analysis, detailed inventory of resources adjacent to pipeline routes and their sensitivity, the timing of construction and mitigative measures can all be considered in much greater detail through the state procedure than is possible in the Bureau of Land Management Final EIS or the Department of Interior Summary Report.

We do not feel that adequate information has been presented in either the BLM Final EIS or the Department of Interior West to East Oil Transportation System Report to make decisions on the precise location within the state for a terminus or pipeline. Some sections of the BLM Final document (the movement of oil within Puget Sound, site specific resource inventories, low level effects of oil, etc.) are totally inadequate to allow site specific decisions which would lock the proposal into a single alternative route in Washington State.

Monica Jenkins  
Page 2  
September 28, 1979

Protection of our resources can best be achieved by allowing maximum flexibility in route selection so that sufficient information can be brought forth through EFSEC. Whether one proposal or more than one were approved, terminus location and precise route selection in Washington State should be left to the EFSEC contested case hearings.

bq

cc: EFSEC  
DOE  
WDG  
Mary Lou Mills  
Ron Westley  
Bob Trumble

Washington Department of Fisheries Preliminary  
List of Expert Witnesses, their resumes and topics  
of testimony in EFSEC Cause No. 762 (Northern  
Tier Pipeline)

Dick Bungarner

Education: B.S. Fisheries Science, University of Washington College of Fisheries 1974.

Work Experience: Fisheries biologist Washington Department of Fisheries, shellfish program, May 1974 to present.

Responsibility: Management and research, crab and shrimp stocks and related fisheries within the waters of Puget Sound. Work involves studies to determine geographic location and magnitude of commercial and recreational crab and shrimp fisheries in Puget Sound. Conduct stock assessments to determine crab and shrimp stock abundance, condition and general life history information.

Summary of Testimony:

Topics: Distribution, abundance and general life history of crab and shrimp stocks in Puget Sound. Location and magnitude of commercial and recreational harvest of crab and shrimp in Puget Sound.

Lynn Goodwin

B.S. Zoology, Idaho State University 1964.

M.S. Fisheries, Oregon State University 1967.

Employed Washington State Department of Fisheries July 1966 to present.

Project leader subtidal commercial clam project for Puget Sound 1967 to present

Summary of testimony topics:

Distribution, abundance and life history information of subtidal clams of  
Puget Sound.

Chris R. Jones

Education: M.S. University of Washington in Fisheries Science (1974)

B.S. University of California at Berkeley in Business Admin. (1965)

Professional Experience: 1974-1979 Fisheries Biologist with shellfish division, Washington Department of Fisheries: Management and research duties associated with shellfish resources including oysters, clams, sea urchins, mussels and other miscellaneous commercial species. 1971-1974 Research assistant at University of Washington, College of Fisheries: Research in benthic invertebrates and aquaculture of clams. 1966-1969: US Navy: Line officer on a naval tanker and a destroyer.

Testimony topics:

1. Abundance, distribution, harvest and life history of various species of shellfish including oysters, mussels, sea urchins, octopus, etc.
2. Possible biological impacts of pipeline construction and operation on the marine environment.

Tom Northup

Education: B.S. Oregon State University, General Science 1964

B.S. University of Washington, Fisheries Science 1970

Employed by Washington State Department of Fisheries 1973 to present.

Shellfish biologist in charge of management and research related to razor clams, Dungeness crab, and pink shrimp on the Washington coast and coastal estuary.

Summary of testimony topics:

Distribution, abundance, life history and management of coastal Razor clam, coastal Dungeness crab, and ocean Pink shrimp.

Albert J. Scholz

Education: Oregon State University 1961 to 1965, BS in Fisheries Science

Work Experience: Started work with the Washington Department of Fisheries in 1965 on Pacific oyster mass mortality study. Have worked on dredge spoils disposal studies and from 1973 to present have been project leader of the Puget Sound recreational shellfisheries management project which is concerned with personal use harvest of clams, oysters and crab.

Testimony will relate to the existing recreational fisheries for intertidal shellfish from Puget Sound beaches and including standing crop estimates, harvest estimates, fishing locations.



Ronald E. Westley

B.S Fisheries, University of Washington 1951.

Employed 28 years Washington Department of Fisheries in shellfish research and management. Oyster, clam, crab and shrimp research and management. Estuarine biological, oceanographic, water pollution; currently assistant director for shellfish (acting).

Summary of testimony topics:

Shellfish life history stocks research and management in areas of impact.

Shellfish production potential in areas of impact. Effects of sediment on marine organisms. Effects of water pollution on marine organisms. Water circulation in Puget Sound.

LLOYD A. PHINNEY

EDUCATION

B.S. in Fisheries, University of Washington, 1955.

PROFESSIONAL AFFILIATIONS

Pacific Fisheries Biologist, National Wildlife Federation.

EXPERIENCE

Mr. Phinney has been employed by the Washington Department of Fisheries since 1963. He is presently Assistant Chief of the Natural Production Division. In this capacity he is responsible for the assessment of effects of major projects on the foodfish resource of Washington. Mr. Phinney has experience in environmental assessment gained from five years of studies of coastal Washington streams and three years of involvement with power dam operations in the state.

SUMMARY OF TESTIMONY

Mr. Phinney will provide testimony relating to the impact of stream crossings in Eastern Washington. He will also provide testimony relative to salmon production habitat as well as present run assessment in Eastern Washington rivers and streams which may be impacted by the Northern Tier Project.

ROBERT GERKE

EDUCATION

B.S. in Fisheries, University of Washington, 1963.

PROFESSIONAL AFFILIATIONS

Pacific Fisheries Biologists.

EXPERIENCE

Mr. Gerke has been employed by the Department since 1965. He is presently assigned to the Major Projects Section of the Natural Production Division. The primary responsibility of this position is to help direct programs that provide for the protection of fish life and habitat at hydro-electric and thermal power facilities, water storage dams, fish screening installations, and large industrial, municipal, and irrigation water diversions. He has worked in this Section for 4 1/2 years and has prepared testimony and testified in two hearings--The Nisqually River flow FERC Case, and the recent WPPSS 3 & 5 Nuclear Project NPDES permit modification request.

SUMMARY OF TESTIMONY

Mr. Gerke will provide testimony relating to the impact of stream crossings in Western Washington. He will also provide testimony relative to salmon production habitat as well as present run assessment in Western Washington rivers and streams which may be impacted by the Northern Tier Project.

ROBERT J. TRUMBLE

EDUCATION

B.S. (Oceanography) University of Washington, 1965.  
M.S. (Fisheries) University of Washington, 1973.  
Ph.D. (Fisheries) University of Washington, 1979.

HONORS AND PROFESSIONAL AFFILIATIONS

Member, Sigma Xi

EXPERIENCE

Washington Department of Fisheries, Unit Leader, Baitfish Management Unit.  
Directs management and research activities for herring and other baitfish species. 1975 to present.

University of Washington, College of Fisheries, graduate student, 1971-1979.

U.S. Naval Oceanographic Office. Oceanographer. Planned and conducted oceanographic research cruises for high priority military project, and analysed resulting oceanographic data. 1966-1971.

SUMMARY OF TESTIMONY

Dr. Trumble will present testimony relative to baitfish resources in the areas potentially affected by the Northern Tier Pipeline. He will discuss life stages, timing, abundance, and values for the various baitfish species.

RAY C. JOHNSON

EDUCATION

1956 B.S., College of Fisheries, University of Washington

PROFESSIONAL AFFILIATIONS AND HONORS

Elected to Phi Beta Kappa, Zeta Mu Tau (the pure and applied science scholastic honorary) and Phi Sigma (the biological science scholastic honorary).

EXPERIENCE

April 1979 - Present: Assistant Chief for Planning and Permits, Salmon Natural Production, WDF.

October 1975-April 1979: Assistant Chief for Enhancement, Salmon Natural Production, WDF.

April 1975 - October 1975: Environmental Coordinator, WDF.

1964 - April 1975 Work done for WDF involving salmon management and research with emphasis on salmon habitat management and pink and chum investigations.

1959 - 1963 District Biologist

1958 - Bioassay studies at the WDF Shellfish laboratory on Hood Canal.

1956 - 1957: Washington Coastal Investigations (habitat management and regulation of coastal salmon fisheries), WDF

SUMMARY OF TESTIMONY

Mr. Johnson will testify concerning juvenile salmonids with particular emphasis on pink and chum in marine waters. Timing, occurrence, abundance and critical factors concerning their survival will be covered.

MARY LOU MILLS

EDUCATION

B.A. (cum laude) in English with Geology-Biology minor, Vassar College, 1966.  
M.S., Fisheries, U.W., 1975:

PROFESSIONAL AFFILIATIONS

Pacific Fisheries Biologists, Pacific Estuarine Research Society,  
N.A.U.I. SCUBA diving certificate 1969.

EXPERIENCE

1977 - Present: Major Projects biologist for the Marine Habitat Protection Unit, Salmon Natural Production Division, Washington Department of Fisheries

1976 - 1977 Marinefish Enhancement Program Biologist

1975 - 1976 Recreational groundfish Biologist, WDF

1974 - 1975 Scientific aide, WDF and NMFS

1970 - 1974 Worked part-time as salmon hatchery biologist for Sea Resources, Inc., Chinook, Washington (volunteer).

SUMMARY OF TOPICS

Ms. Mills will testify concerning construction techniques, water quality concerns and timing for the marine portion of the pipeline as they relate to the salmon, marinefish, and shellfish resources in the area. Mitigative measures and recommendations based on these resources may also be covered.

EARL FINN, JR.

EDUCATION

B. S. in Fisheries, University of Washington College of Fisheries 1962.

WORK EXPERIENCE

Employed 15 months with Fisheries Research Institute as Scientific Aide or Biologist between 1958 and 1963.

Employed 15 years as Fisheries Biologist by Washington Department of Fisheries 1963 to present. Duties included sockeye salmon research, management of razor clams and ocean pink shrimp, water quality studies in marinas and natural salmon rearing area (fresh water and salt water) juvenile pink and chum studies relating to bulkheads in marine waters, natural salmon potential production, salmon egg incubation studies, salt-and fresh-water rearing area salmon, culture studies; since November 1974 to present, supervise Marine Habitat Protection Unit including environmental review and permit writing.

SUMMARY OF TESTIMONY

Water quality related construction impacts to salmon in marine habitats, timing constraints and previous conditional permits for similar construction in marine areas.

MILLARD S. DEUSEN

EDUCATION

1970 - B.A. in Zoology, Central Washington State College

1974 - M.S. in Biology, Vertebrate Ecology, Central Washington State College

PROFESSIONAL AFFILIATIONS

Pacific Fisheries Biologists.

EXPERIENCE

1977 - present: Supervisor of Freshwater Project Review Section,  
Washington Department of Fisheries (Biologist III).

1975 - 1977 Biologist - Investigator for Washington Dept. of Fisheries

SUMMARY OF TESTIMONY

Construction methods, timing of construction, design and impacts in fresh water crossings and aquifers. Mitigation and measures to protect salmon resources.



MARK G. PEDERSEN

Unit Leader, Groundfish Management, Marine Fish Program, Washington Dept. of Fisheries  
November 1975 - Present

EDUCATION

B.S. in Fisheries, University of Washington, 1969

M.S. (Fisheries), University of Washington, 1974

HONORS AND PROFESSIONAL AFFILIATIONS

Mr. Pedersen has served as chairperson of the U.S. Section of the Technical Sub-Committee of the International Groundfish Committee; chairperson of the Pacific Marine Fisheries Commission Albacore Committee; member of the Pacific Fishery Management Council Groundfish Management Planning Team; and member of the Pacific Coast Marine Recreational Survey Coordinating Committee; and is a member of the Pacific Fishery Biologists. He was a winner of the Northwest Marine Industries Institute Scholarship in 1973.

EXPERIENCE

November 1975 - Present: Unit Leader, Groundfish Management, Marinefish Program, Washington Dept. of Fisheries, Biologist IV.

July 1975 - November 1975 Project leader, Groundfish Management, Marinefish Program, Biologist III

August 1973 - June 1975 Groundfish Stock Assessment, Biologist II

July 71 - July 73 Research Technologist, Dept. of Pharmacology, U of W.

June 1969 - June 1971 Peace Corps Volunteer  
Fisheries Management Biologist

SUMMARY OF TESTIMONY

Mr. Pedersen will provide testimony relating to the temporal and geographical distribution and value of the commercial and recreational fisheries for groundfish in the subject area. He can also describe the life history and distribution of economically important species of groundfish.

RECEIVED  
OCT 04 1979

DUANE E. PHINNEY

EDUCATION

B.S. (Fisheries) University of Washington, College of Fisheries, 1966.

M.S. (Fisheries) University of Washington, College of Fisheries, 1968.

PROFESSIONAL AFFILIATIONS

Member of Society of the Sigma Xi, American Fisheries Society (certified fisheries scientist), American Institute of Fisheries Research Biologists, and Pacific Fishery Biologists.

SUMMARY OF TESTIMONY TOPICS

Testimony on the salmonid fish populations and commercial and recreational fisheries for salmon in the State of Washington and vicinity of NTPC facilities.

## VITA

NAME: Rick Daniel Cardwell

SOCIAL SECURITY NUMBER: 547-62-9784

DATE AND PLACE OF BIRTH: February 24, 1945; Portland, Oregon

### EDUCATION:

B.S. (Fisheries): Oregon State University, Corvallis, 1967

M.S. (Fisheries): University of Washington, Seattle, 1968

Ph.D. (Fisheries): University of Washington, Seattle, 1973

### EXPERIENCE:

My principal areas of expertise include aquatic ecology, aquatic toxicology, and fish physiology. Research interest centers upon the effects of environmental change on fish and shellfish.

As an undergraduate my training emphasized fisheries biology and aquatic entomology. In attaining the M.S. degree, I studied the effects of stress (tagging, water quality) on the hematology, blood chemistry and lipid chemistry of juvenile and adult Pacific salmon. As a doctoral candidate I examined the acute toxicity of No. 2 fuel oil on various fish and marine invertebrates. Following graduation, I was program manager for several research and development contracts for the Environmental Protection Agency which sought to determine the acute and chronic effects of pesticides, organics, and heavy metals on freshwater fish and invertebrates. While with the Washington Department of Fisheries, I have researched the effects of a variety of chemicals, municipal and industrial effluents, dredging, and marinas on marine fish and invertebrates, both in the laboratory and field. In the past 3 years I have become increasingly involved, as a project leader, in examining certain aspects of juvenile salmonid carrying capacity, particularly that pertaining to chum and pink salmon juveniles. Undertaken in response to Washington's accelerated salmon enhancement program, the work has emphasized predation, food habits, and food supply in fresh, estuarine and marine habitats.

### EMPLOYMENT:

1974-Present: (Senior) Aquatic Biologist, Washington Department of Fisheries, Research and Development Division, 115 General Administration Building, Olympia, Washington 98504.

1973-1974: Senior Aquatic Biologist: Chemico Process Plants Company-Envirogenics Systems, 9200 East Flair Driver, El Monte, California 91730.

1969-1973: Pre-doctoral Research Associate: Fisheries Research Institute, University of Washington, Seattle, 98195

1967-1968: Research Assistant: Fisheries Research Institute, University of Washington, Seattle 98195

1966(summer): Fishery Biologist trainee: Oregon State Game Commission, 1634 S.W. Alder Street, Portland, Oregon 97208

1965(summer): Fishery Biologist trainee: Oregon State Game Commission, 1634 S.W. Alder Street, Portland, Oregon 97208

#### TEACHING POSITIONS:

1969(autumn): Teaching Assistant, undergraduate fish physiology and anatomy, College of Fisheries, University of Washington, Seattle 98195

1969(winter): Instructor in marine science, Olympic College, Bremerton, Washington 98501

#### PROFESSIONAL AFFILIATIONS AND ACTIVITIES

##### American Fisheries Society

---Member since 1967

---Coordinator for AFS review of selenium section for EPA "Red Book,"

---President, North-Pacific International Chapter(Washington and British Columbia), 1979-1980.

---Co-chairman, Publications Committee, Western Division, 1979-1980.

##### American Society for Testing and Materials

---Chairman, Task Group for development of Standard Practice for Conducting Basic Acute Toxicity Tests with Larvae of Four Species of Bivalve Molluscs, 1977-1980.

##### American Institute of Fishery Research Biologists

---Member since 1973

---Secretary-Treasurer, Northwest Washington District, 1975-1978

##### American Society of Limnology and Oceanography

---Member since 1979

#### PAPERS PRESENTED:

I have presented over a dozen papers at national and local symposia and meetings over the past 7 years. A listing of the salient presentations is available upon request.

#### PUBLICATIONS:

Unpublished reports of limited circulation are omitted.

Cardwell, R.D. 1968. Qualitative and quantitative changes in the plasma proteins of Pacific salmon resulting from natural and induced stresses. M.S. Thesis, University of Washington, Seattle, Washington. 94 pp.

Publications--continued:

- Cardwell, R.D., J.B. Saddler, and L.S. Smith. 1971. Hematological effects of Dennison tagging upon juvenile pink salmon (Oncorhynchus gorbuscha). *Comparative Biochemistry and Physiology*, 38A: 497-503.
- Smith, L.S., J.B. Saddler, R.D. Cardwell, A.J. Hearn, H.M. Miles, T.W. Newcomb, and K.C. Watters. 1971. Responses of teleost fish to environmental stress. U.S. Environmental Protection Agency Water Pollution Control Research Series, No. 18050E8X02/71. 114 pp.
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- Cardwell, R.D. 1973. Acute toxicity of No. 2 diesel oil to selected marine invertebrates and marine fish. Ph.D. Dissertation, University of Washington, Seattle.
- Cardwell, R.D., D.G. Foreman, T.R. Payne, and D.J. Wilbur. 1976. Acute toxicity of selected toxicants to six species of fish. Environmental Protection Agency Ecological Research Series, EPA-600/3-76-008, 117 pp.
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- Cardwell, R.D., C.E. Woelke, M.I. Carr, and E.W. Sanborn. 1977. Evaluation of the efficacy of sulfite pulp mill pollution abatement using oyster larvae. In: F.L. Mayer and J.L. Hamelink (eds.), *Aquatic toxicology and hazard evaluation*, American Society for Testing and Materials Spec. Tech. Publ. 634. pp. 281-295.
- Cardwell, R.C., 1977. Acute toxicity of sediments and associated chemicals to larval Pacific oysters (Crassostrea gigas), Appendix L, 149 pp., In: *Maintenance Dredging and the Environment of Grays Harbor Washington, U.S. Army Corps of Engineers District, Seattle, Washington.*

## PUBLICATIONS--continued

- Cardwell, R.D., C.E. Woelke, M.I. Carr, and E. Sanborn. 1977. Appraisal of a reference toxicant for estimating the quality of oyster larvae. *Bull. Environ. Contam. Toxicol.* 18:719-725.
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- Hirota, J., R.D. Cardwell, A.W. Kendall Jr., P.A. LaRock, S.M. Novak, and N.J. Prouse. 1977. The plankton, Chapter 4, pp. 40-56. In: *Oil Spill Studies: Strategies and Techniques*. Publ. No. 4286, American Petroleum Institute, Washington D.C.
- Cardwell, R.D. and C.E. Woelke. 1979. Marine water quality compendium for Washington state. Washington Dep. Fisheries, Olympia, Washington. Vol. I, 75 pp; Vol. II, 528 pp.
- Cardwell, R.D., C.E. Woelke, M.I. Carr, and E.W. Sanborn. 1979. Toxic substance and water quality effects on larval marine organisms. *Tech. Rep.* 45, Washington Dep. Fisheries, Olympia, Washington. 71 pp.

Summary of Testimony

Toxicology and other effects of petroleum  
products on aquatic organisms.



STATE OF  
WASHINGTON

Dixy Lee Ray  
Governor

DEPARTMENT OF FISHERIES

115 General Administration Building, Olympia, Washington 98504

206/753-6500

November 5, 1979

RECEIVED

NOV 05 1979

NATURAL  
PRODUCTION

Joey Blum  
Oceanographic Inst. WA  
158 N. Thomas  
Seattle, Washington 98109

Dear Sirs:

As per your request for adult returns and related releases from Dungeness, Hood canal, George Adams and Hunter Springs (Weaver Creek) hatcheries, I have enclosed the following information: adult escapements to hatchery racks 1963-1978 for chinook, coho, chum and pink salmon. Release data for these facilities is included from 1973 to 1977.

Hunter Springs will come on line this year and its programmed capacities are 10 million chum and .3 million fall chinook.

I have also included the 1978-1979 programmed production plans for the stations mentioned above. These schedules, as well as, the release and return statistics should provide you with a fair idea of the production capabilities of the hatcheries in this area. These figures do not indicate the escapement or production of wild stocks in this region.

We are happy to provide the information requested, and for your convenience, further inquiries should be directed to Mary Lou Mills, Washington Department of Fisheries, Natural Production Division 753-6618.

Sincerely,

Robert Hager  
Asst. Chief, Assessment & Development  
Salmon Culture Division

BH:bb

cc: Mary Lou Mills

Attachment



State of Washington  
DEPARTMENT OF FISHERIES

November 8, 1979

MEMORANDUM

TO: Northern Tier Reviewers and File  
FROM: Mary Lou Mills *MLM*  
SUBJECT: Pipeline Lay Barge Film

Bill Self, the EFSEC representative who is coordinating the Northern Tier Case, has obtained a film concerning the operation of a pipeline lay barge. This is the type of barge that would be used to construct the submarine crossings in Port Angeles Harbor, Admiralty Inlet, and Saratoga Passage. The film is scheduled for showing Tuesday, November 13, at 2:00 p.m. in the EFSEC offices here in Olympia. The address of the EFSEC office is 820 East 5th Avenue.

The reports that I have received about the film indicate that it is accurate as a documentary. The film apparently won the Cannes Film Festival Award for documentary the year that it was produced. Bill Self has been out on the pipeline lay barge depicted in the film while the barge was operating down in the Gulf of Mexico. He feels that the 45-minute film is quite accurate also. He will be there when the film is shown and would be most willing to answer questions about the operation of the lay barge.

The conference room at the EFSEC offices have a capacity of about 15 people. I would appreciate our knowing how many people wish to attend the Tuesday showing so that we can determine if other agencies such as Ecology or Game can send representatives at the same time. I look forward to hearing from people who want to attend this in advance of the 13th if at all possible. If you don't get a chance to let me know in advance I'll see you there.

bq

cc: Shellfish, Olympia  
Brinnon Shellfish Lab  
Marinefish, Seattle  
Rick Cardwell  
Duane Phinney  
Lloyd Phinney  
Millard Deusen  
Earl Finn  
Ray Johnson  
Bill Rees  
Salmon Culture

2  
3 WASHINGTON DEPARTMENT OF FISHERIES

4  
5 November 14, 1979, Review

6  
7  
8 The Department of Fisheries has reviewed the above-referenced application  
9 for site certification to determine areas where additional information is needed.  
10 We have also found various areas where we disagree with the assessment, tech-  
11 niques, etc., contained in the application.

12 We have divided our comments into three main categories: (1) Spill  
13 Trajectory and Impacts, (2) Design, Engineering, Construction Practices, and (3)  
14 Risk Analysis, and Fishery Resources. Each category contains general comments  
15 followed by some specific examples of the insufficiencies and areas of dis-  
16 agreement. While the specific examples serve to clarify and elaborate on the  
17 initial general comments, they are not meant to be an exhaustive list of all  
18 particular and specific concerns. This is so because Fisheries is consulting  
19 in part with experts outside of the agency on certain subjects of the applica-  
20 tion for site certification. When final analysis by these consults is com-  
21 pleted, the responses made likely will change or be supplemented in several  
22 respects.

23  
24  
25  
26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION

1 Spill Trajectory and Impacts

2 The geographic area covered should be broadened to more accurately depict  
3 the resources within impact of the pipeline. In this regard, more accurate  
4 oceanographic information is needed to predict the fate of spilled oil from the  
5 project. Additional information is also needed on toxicology of the crudes  
6 carried by the project as well as other effects which will impact the harvest  
7 or harvestability of the resources in question. The economic data used in the  
8 application should be augmented with updated values including published evalu-  
9 ations of recreational resources. These should be related to adequate inven-  
10 tories of production, harvest, and potential for all the resources impactable  
11 in all geographic areas of concern.

12 Some specific comments are as follows:

- 13
- 14 1. We disagree with the geographic areas considered to be impactable.  
15 For example, construction and operation impact will affect more of  
16 the state's marine habitat than is covered. Marine areas (as well  
17 as freshwater) below the stream crossings should be discussed. A new  
18 oil port will increase tanker traffic and result in increased risk of  
19 off-coast mishaps. Appraisal of coastal resources and uses is needed.  
20 The geographic areas considered impactable by any oil spill should  
21 be determined by use of models which use the most recent oceanographic  
22 data. Such an analysis is lacking in the present application.  
23
  - 24 2. The summary of economic impacts due to potential losses is insufficient.  
25

26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION

1 A variety of worst case analyses should be included which summarizes  
2 the potential economic losses due to impacted resource. Discussion  
3 should include interference with fisheries, displacement of fisheries,  
4 gear damage, recovery periods, and total loss to the state's economy.

5  
6 3. Additional information is needed on the toxicology of the various  
7 crudes planned for trans-shipment and on the bactericides mentioned.  
8 Their effects on critical life history stages of various marine and  
9 freshwater fish resources should be dealt with in greater detail.  
10 The effect on harvest, through either impact on or tainting of fish-  
11 ery products, or interference with the fishery should be discussed.

12  
13 4. Discussions of a wide variety of historic spills in comparable climates  
14 is necessary to predict effects in Puget Sound. This discussion  
15 should include the Amoco Cadiz spill.

16  
17 5. We disagree strongly with the minimal impacts the application attri-  
18 butes to potential oil spills.

19  
20 6. We disagree strongly with the minimal impacts the application attri-  
21 butes to the proposed stream crossing techniques. Both this disagree-  
22 ment and the previous one relate to inadequate assessment of resources,  
23 of spill trajectories, of harvest impact, of ecological/life history  
24 impacts, and of toxicology.

25  
26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION

1  
2 7. The impacts entailed in abandonment should be further discussed as  
3 should bonding for environmental restoration in case of financial  
4 failure of the company.

5  
6 8. We disagree with the general attitude expressed that adult organisms  
7 can avoid the construction-operation impact area.

8  
9 9. Additional information is needed on the potentially profound in-water  
10 impacts associated with work above MHW or OHW. Paralleling a creek,  
11 for example, can produce severe habitat degradation.

12  
13 10. The statement is made the impacts within some streams are anticipated  
14 due to low flow at the time of water withdrawals for hydrostatic  
15 testing. Specifics of these anticipated impacts (location, timing,  
16 species, etc.) are needed.

17  
18 11. All impact discussions should include habitat degradation as well as  
19 duration of effects on both species and habitat. Duration of effect  
20 should be related to spill response time and cleanup effectiveness as  
21 well as to the individual life histories of the fish resources  
22 involved.

23  
24 12. Additional information is needed on the submarine soil types present

25  
26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION

1 following construction of the submarine crossings. Will they be  
2 suitable for recolonization by marine organisms occurring there now,  
3 and how soon will that occur?  
4

- 5 13. Additional information is needed on the negative impacts on smelt due  
6 to beach alteration in Saratoga Passage.  
7

8 Design, Engineering, Construction Practices, and Risk Analysis

9 The risk presented by the pipeline is not presented accurately by the  
10 applicants since the present analysis is based on insufficient information con-  
11 cerning both engineering and fish resources. Additional information is needed  
12 on engineering aspects of the proposal, including alternative designs and  
13 engineering techniques, their advantages and disadvantages. Insufficient  
14 information is provided concerning oil spill clean-up, restoration (following  
15 both construction and oil spills), and abandonment. Historic information  
16 concerning construction practices, impacts, problems, and operational risks of  
17 pipelines and similar facilities is also needed to ensure that past problems  
18 are anticipated and avoided if possible.

19 Some specific comments follow:  
20

- 21 1. Pipeline risk analyses should use data from comparable situations or  
22 state that there are none. Conditions in the Strait of Juan de Fuca  
23 do not seem comparable to terrestrial or even shallow pipelines.  
24

- 25 2. We disagree with the method proposed for crossing streams and rivers

26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND

27 INSUFFICIENT INFORMATION

1 within Washington state. Open trenching is not acceptable without  
2 stream diversion or some equally effective siltation control in most  
3 instances.

4  
5 3. More site specific engineering information is needed on the stream  
6 crossings proposed (particularly those between Partridge Point and  
7 Snoqualmie Pass). Locations and cross-sectional drawings are needed.  
8 The application does not contain stream flow and site descriptions  
9 for all proposed crossings. The mapped crossing sites do not correspond  
10 with verbal descriptions of crossing locations in some cases.

11  
12 4. We disagree with the concept of allowing Northern Tier's "environmental  
13 coordinators" determine exact location, timing, and mitigative design  
14 features of river crossings, marine crossings, and water withdrawals.

15  
16 5. Additional information is needed on the proposed location of water  
17 withdrawals. The configuration of the water intakes, screen sizes,  
18 cross-sectional areas, withdrawal rates proposed, and approach  
19 velocities are all needed. Similar information is needed for water  
20 releases. Mitigative measures to minimize scour at release sites is  
21 needed site specifically. Drawings of intakes and outlets are needed.

22  
23 6. Additional information is needed on bacteriacides and rust inhibitors  
24 proposed as well as on the mode of treatment of effluent should that  
25 become necessary.

26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION

1 7. More information is needed on river crossing problems and solutions  
2 achieved by other projects in Washington state and similar areas.

3  
4 8. Additional information is needed which makes a distinction between  
5 turbidity, suspended solids, and settleable solids which can occur  
6 because of construction or post-construction erosion. The distinction  
7 between the three is insufficient particularly in the river crossing  
8 sections. The effects on spawning habitat are due to settleable  
9 solids.

10 9. Additional information is needed on alternate stream crossing techniques.  
11 For example, aerial crossing is mentioned in the application for some  
12 stream crossings but no further details (locations, etc.) are given.

13  
14 10. Additional information is needed on methods to control erosion during  
15 and after construction and subsequent siltation in the streams and  
16 marine areas. In addition to temporary catch basins, use of jute  
17 mats, straw bales, water barring, riprap, and time tables for replanting  
18 and revegetation of disturbed grounds all merit site specific discussion.

19  
20 11. More information is needed on the potential effects on stream flows  
21 entailed in breaking through the streambed into aquifers or permeable soils  
22 below.

23  
24  
25  
26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION -7-



1 12. Additional information is needed concerning engineering aspects of  
2 the submarine section of the pipeline.

3  
4 13. Cross-sections and plan views are needed for the crossings including  
5 details of the shoreward riprapping proposed at each land fall.

6  
7 14. There is insufficient information in the present application on  
8 submarine soil types within the proposed and alternate marine routes.  
9 Do bedrock or large rocks occur with the routes? How would construc-  
10 tion and operation of the pipeline be altered by their presence? How  
11 does the soil composition change with depth below the surface of the  
12 bottom substrate at locations within the pipeline crossing?

13 15. We disagree that currents are sufficient for backfilling the submarine  
14 trench particularly in Saratoga Passage.

15  
16 16. Additional information is needed on the quantities of dredge spoils,  
17 their composition, suitability for in-water disposal, effects on  
18 water quality, and planned disposal area(s).

19  
20 17. More information is needed on the chemical and physical properties of  
21 the oils which will be carried and their mixing characteristics subse-  
22 quent to pipeline rupture or chronic leaks.

23  
24 18. Details of the inspection procedures planned especially for the sub-  
25 marine pipeline are needed. Also, a discussion is warranted of

26 FISHERIES' LISTING OF AGREEMENT, DISAGREEMENT, AND

27 INSUFFICIENT INFORMATION

1 methods to repair the pipeline if damaged and the types of impacts  
2 this would cause.

3  
4 19. More information is needed concerning the temperature of oil at the  
5 offloading point and throughout pipeline system as this could influence  
6 the impact of a spill. This information should relate to the ecologi-  
7 cal effects of the temperature of spilled oil and the pipeline. It  
8 should also relate to the statement that the ultimate loading tempera-  
9 ture at Valdez is 120-140°F.

10  
11 20. Why wasn't the alternative of an all terrestrial pipeline on the west  
12 side of the Olympic Peninsula discussed.

13  
14 21. Much more information is needed on planned and potential mitigative  
15 measures to protect marine waters, flora, fauna, natural resources,  
16 recreation areas and facilities, and commercial fisheries from con-  
17 struction and operational impacts of the pipeline. Project design  
18 and construction should meet all WDF criteria. Information provided  
19 should include prevention, clean-up, restoration, and compensation  
20 plans for damage from construction spills and other casualties.

21 Details of oil spill response plan, personnel, training, and equipment  
22 to respond to a spill in either marine or freshwater areas are needed.

23 Resource protection priorities, estimated response time, and clean-  
24 up techniques should be discussed. Based on a wide selection of  
25 historic spills of crude oil and similar petroleum products, estimates

26 FISHERIES' LISTING OF AGREEMENT, DISAGREEMENT, AND

27 INSUFFICIENT INFORMATION

1 should be made of the potential costs of clean-up and the degree of  
2 success anticipated for a massive "worst-case" type spill. Cut-off  
3 or at least block valves are needed on salmon-producing streams and  
4 rivers.

5  
6 22. We do not agree that inspection of the submarine pipeline once very  
7 five years is adequate particularly in Admiralty Inlet. Since cur-  
8 rents in Puget Sound are very strong, particularly in Admiralty  
9 Inlet, how will aerial surveillance be planned to cover the area  
10 spilled oil is going on surface from a submarine spill or leak.

11  
12 23. Mitigation should be discussed for loss of recreational facilities  
13 other than the ones at Ediz Hook. For example, will the boat ramp  
14 at Port Williams be replaced?

15 Fishery Resources

16 The applicants have supplied insufficient information on the magnitude and  
17 nature of fishery resources potentially impacted by the proposed project.

18 Additional information is needed on harvest, potential production, availability,  
19 value, and life history of the food fish and shellfish resources of commercial  
20 and recreational importance.

21 Some specific comments follow:

- 22  
23 1. Current harvest figures and historical data are needed for all species  
24 presently harvested. In addition to current and historical harvest  
25 data, the mode, species, location, and magnitude of participation are

26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION

1 needed for both recreational and commercial harvests. Available  
2 published data on abundance and distribution of some resources have  
3 been omitted or misinterpreted (herring and subtidal clams are  
4 examples of this problem).

5  
6 2. Current production of underutilized species and production of resources  
7 which are being cultured or which can be cultured is needed.

8  
9 3. Discussion of the interdependence of some fish, shellfish, and benthic/  
10 epibenthic populations is needed. Tallying organisms does not place  
11 sufficient emphasis on some species of major ecological importance.  
12 Additional information is needed on critical life history stages of  
13 various fishery resources including the timing involved.

14  
15 4. We disagree with the definition of both natural resources and recreation.  
16 Resources which are recreationally harvested should be included as  
17 natural resources. Recreational considerations should not be limited  
18 to developed recreational sites. The definitions presently used in  
19 the application, for example, all but eliminate consideration of  
20 recreationally important shellfish. Loss of this recreation has to  
21 be considered due to loss or contamination of resources.

22  
23 5. Inadequate consideration is given to the fact that only limited  
24 portions of some populations are available for harvest (e.g. geoduck  
25 to a particular depth; subtidal hardshell clams to harvester depth;

26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND  
27 INSUFFICIENT INFORMATION

1 intertidal clams on public beaches vs. private beaches). Special  
2 note is needed of those species which occur primarily intertidally  
3 (such as Eastern softshell clam on the Skagit Flats and Port Susan)  
4 since these habitats are the most vulnerable to impact from oiling.  
5

6 6. Critical areas for many additional species are needed in Figure III  
7 1.5-3. Some examples includes lingcod, Pacific cod, rockfish, and  
8 flatfish.

9  
10 7. More detailed resource information is needed in the path of the  
11 pipeline and the construction impact zone below 60 feet in the  
12 submarine pipeline route.

13  
14 8. Additional information is needed on the suitability of the stream  
15 crossing areas for use by spawning salmon. In addition, occurrence  
16 of spawning downstream of the proposed crossings should be noted.

17 9. Information contained in the application on the distribution, abundance,  
18 and timing of juvenile salmonids especially in marine waters is inade-  
19 quate.

20  
21 10. We disagree with the statements that there is a lack of successful  
22 salmon spawning in the vicinity of Port Angeles Harbor and its tribu-  
23 taries. Oil could reach the mouths of several river mouths (such as  
24 the Elwha and Dungeness as well as numerous independent streams)  
25 within hours of a spill at Port Angeles.

26 FISHERIES' LISTING OF AREAS OF AGREEMENT, DISAGREEMENT, AND

27 INSUFFICIENT INFORMATION

- 1 11. The commercial geoduck leases are now only 200 yards from shore, not  
2 1/4 mile as the application states.
- 3
- 4 12. Information is needed on tribal subsistence fisheries which are  
5 different from commercial and recreational fisheries.
- 6
- 7 13. Post-spill and post-construction succession of marine flora and phyto-  
8 plankton which are utilized by various fish populations should be  
9 given much further consideration. Discussions of impacts on different  
10 stages and on life cycles of flora are inadequate.

11  
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25

LAW OFFICES OF

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November 28, 1979

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DEPARTMENT OF GAME  
ATTORNEY GENERAL'S OFFICE

Mr. Dennis Reynolds  
 Assistant Attorney General  
 Temple of Justice  
 Olympia, Washington 98504

Re: Northern Tier Site Application -  
 Department of Fisheries Questions & Comments

Dear Mr. Reynolds:

At the prehearing conference in Olympia held on November 15 and 16, Judge von Reis ordered representatives of the Northern Tier Pipeline Company to meet with representatives of the Department of Fisheries for the purpose of exchanging technical information in advance of the contested case hearings. Northern Tier was also instructed to provide written responses by December 5, 1979 to questions or comments posed by that department in the event oral explanation at the technical exchange was inadequate.

Representatives of Northern Tier met with Mary Lou Mills and Mark Pedersen of the Department of Fisheries for a short period of time on Thursday afternoon November 15 and with Mary Lou Mills for three and a half hours on Friday morning, November 16. We are sorry you were unable to attend the Friday meeting. Except as noted below, it is the belief of the Northern Tier representatives that the oral technical exchange responded adequately to the questions posed by the Department of Fisheries to the extent information was available with which to respond.

In listing the items of information which Northern Tier will provide when it becomes available, I will make reference to the Department of Fisheries (DOF) document which was produced at the prehearing conference and called Document A. DOF separated its comments into three discrete areas, to-wit: (a) Spill trajectory and impact; (b) Design, engineering, construction practices and risk analysis; and (c) Fishery resources. Under each of those areas a series of questions and comments were posed and numbered. In listing the items of information to be supplied I will use a

code, for example, DOF(a)(1) which would mean the first question posed by the Department of Fisheries under the heading Spill Trajectory and Impact.

These are the information studies and reports Northern Tier will make available as they become available (To be made available means they will be deposited with EFSEC for sure; if sufficient copies are made, one will be sent to DOF. Most likely, they will be deposited with EFSEC):

(a) Spill Trajectory and Impact

DOF(a)(1). Additional work on the oil spill trajectory is being done by a company known as OIW. It was the position of the Northern Tier representatives that much of the work done by OIW and generally sufficient to respond to DOF's concerns is contained in the draft EIS prepared by CH2M-Hill for EFSEC.

DOF(a)(2). ERT, technical consultants to Northern Tier are in the process of preparing additional material to address the economic questions posed by DOF.

Some of the questions raised by DOF in this section as well as others will also be responded to by a study which is being prepared, known as the Oil Spill Contingency Plan.

DOF(a)(9). Studies have already been prepared by technical consultants to Northern Tier and the information supplied to CH2M-Hill and utilized by that company in its preparation of the draft EIS. Northern Tier's consultant (Steve Alsup) agreed to provide the same data to DOF if he could locate it.

(b) Design, Engineering, Construction practices,  
and Risk Analysis

Some of the comments and questions which were raised in this section may be answered as a result of the field trip undertaken by DOF representatives with Northern Tier personnel. DOF agreed to have further conversations with Northern Tier if this seemed useful. It was also agreed that construction practices, some of which were dependant on final design, were a fruitful area for agreement between the parties but that much of the detail sought by the questions and comments here could not be responded to until such time as final design had begun. That process will begin soon and be ongoing. Northern Tier representatives also felt that many of the questions would be answered by the Oil Spill Contingency Plan, the testimony to be given in support of the NPDES application and the studies to be provided as agreed with reference to DOF(a)(9).



DOF(b)(10). Northern Tier representatives felt the Revegetation report, now in progress, would be responsive.

DOF(b)(13). A question was raised about methods of bulk-heading. Northern Tier agreed to provide additional information on this matter. Northern Tier representatives felt the engineering recommendations may be contained in the R.J. Brown report which is on file at the EFSEC repository.

DOF(b)(22). Northern Tier representatives agreed to review the R.J. Brown study to ascertain if the recommendations for inspection are contained therein. There will be further conversation with DOF on this question.

(c) Fishery Resources

DOF(c)(1). ERT is generating an additional report regarding economic loss, and Northern Tier representatives felt the study (already mentioned above) will provide the information sought.

DOF(c)(7). ERT is providing an additional report on the effects of dredging and this material will be provided as hereinabove set forth.

On some issues the parties simply agreed to disagree. Other than the reports and studies which have been mentioned above, Northern Tier did not undertake to do any additional work or studies. It is believed by the Northern Tier representatives that the studies mentioned and the testimony in the contested case hearings will be more than adequate to satisfy the concerns of the Department of Fisheries.

Very truly yours,

PRESTON, THORGRIMSON,  
ELLIS & HOLMAN

By

  
Larry M. Carter

cc: Hon. Jon von Reis  
Mary Lou Mills

