

Exxon Valdez Oil Spill Trustee Council

645 G Street, Suite 401, Anchorage, AK 99501-3451 907/278-8012 fax: 907/276-7178



MEMORANDUM

TO: Trustee Council Members

FROM: Molly McCammon
Executive Director

DATE: February 7, 1997

RE: Briefing materials for February 14, 1997 meeting

This memo, draft agenda and enclosures constitute your briefing packet for the February 14 meeting.

1. Meeting Notes. The draft meeting notes for the December 6, 1996 meeting are enclosed.
2. Project Status Report. The quarterly project status report as of December 31, 1996 will be distributed at the meeting.
3. Financial Report. Enclosed are the financial statements as of December 31, 1996.
4. FY 98 Work Plan. The Invitation for FY 1998 Project Proposals will be available February 15. Enclosed is a schedule for reviewing proposals and Trustee Council action. Note that the schedule indicates Council action the week of August 4.
5. Archaeological Planning. As you know, the Council contracted with Chugach Development Corporation to prepare a community based plan for restoration of archaeological resources in the Prince William Sound and Lower Cook Inlet areas. Veronica Christman of the Restoration Office has been meeting with the Public Advisory Group, the community facilitators, and community leaders to discuss the various options. Veronica and I will brief you at the meeting on the status of those discussions.

6. Data Policy. Enclosed is a revised version of the proposed data ownership policy that reflect the discussion at the December 6 meeting plus additional discussion with legal counsel. I believe this addresses all the concerns that have been raised.

7. FY 97 Work Plan Additions. Enclosed is a spreadsheet and background information on four proposed additions to the FY 97 Work Plan. I am recommending that all four be funded. The first is an amendment to the administration/public information budget (Project 1100) for a total of \$100.7 to be allocated as \$71.4 in FY 97 and \$29.3 in FY 98. These funds will be used to contract for video and still photographs of the EVOS lands and restoration projects. We are in desperate need of such materials, as most recently evidenced during the Chenega signing ceremony. Project 97162 would supplement the existing herring disease project for a cost of \$34,300 to take advantage of the additional research potential provided by this spring's herring fishery in Prince William Sound. Project 97248, if funded, would mark the first major TEK effort on behalf of the Trustee Council. My recommendation for approval is contingent on final review of the DPD and budget. And finally, I am recommending that the initial limnological work on Delight and Desire lakes, Project 97254, go forward as proposed. Although the answers to the questions raised about this project raise additional questions, the Chief Scientist and I both believe that the initial work has intrinsic value for restoration.

7. English Bay. Enclosed is the restoration benefits report for the proposed English Bay acquisition. This will be first discussed in Executive Session, and has been listed on the agenda as a tentative action item. Buff Bohlen will be present to brief the Council on his recommendation.

8. Small Parcel and Large Parcel Reports. Enclosed are recent status reports on the large parcel and small parcel programs. Also enclosed is material recently received from Chris Rogers with the Trust for Public Land regarding small parcel options along the Homer Spit. I am preparing a briefing for you on the status of the small parcel program and the potential for further activities. In addition, the state is asking for Council action on KEN 1038, the Schilling/Roberts parcel. Backup materials are included.

9. News Clips. Enclosed are recent newspaper articles of interest to the Trustee Council.

10. Miscellaneous Correspondence. Enclosed are copies of recent letters and messages from various individuals.

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MEMORANDUM

TO: Trustee Council

FROM: Molly McCammon, Executive Director

DATE: February 7, 1997

SUBJ: KEN 1038/Roberts (Schilling) Parcel

The purpose of this memorandum is to provide additional information concerning the KEN 1038/Roberts (Schilling) small parcel and how this proposed acquisition would play a central role in the effort to restore injured resources and services on the Kenai River. The State of Alaska has an especially strong interest in this parcel as a key part of the overall effort to conserve and protect the Kenai River drainage, a truly world-class fishery resource that supports the injured services (commercial fishing, recreation/tourism, subsistence) the Council is seeking to restore.

The value of the Kenai River commercial and sport fisheries would be difficult to overstate. Accessible to over 70 percent of the state population, the Kenai River accounts for approximately 19 percent of the total statewide sportfishing interest. The Kenai River produces the world's largest King salmon, supports all five species of Pacific salmon, and provides habitat for 23 other fish species as well. Sport and commercial fish harvests associated with the Kenai River provide as much as \$78 million annually to the state economy. Moreover, there is no other area in the spill region where development threats are so acute and the resource values at risk so great. The river shorelines provide key habitat for juvenile salmon. That habitat is being rapidly degraded by the pressure of ever increasing bank fishing which destroys riverside brush and grasses that stabilize the river banks in addition to providing cover.

Because the Kenai River has such exceptional biological and economic value, and because it receives such intense public use, the Trustee Council's small parcel program is particularly important to the successful conservation of this drainage. To date, several key small parcel acquisitions have been completed and others, including the KEN 1038/Roberts (Schilling) parcel, are under

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consideration. Collectively, these acquisitions provide a cornerstone for a larger comprehensive Kenai River restoration effort that also includes bank stabilization/revegetation efforts; scientific research and monitoring to enhance the ability of resource managers to protect fishery resources (e.g., genetic stock identification to improve in-season management); and improved management of human uses to reduce adverse impacts.

The proposed KEN 1038/Roberts (Schilling) parcel acquisition has an especially important role to play in this comprehensive restoration strategy both because of the parcel's inherent resource values as well as its strategic and highly visible location along the river. Through a joint effort involving the City of Soldotna, the Kenai River Sportfishing Association, the private landowner, and the Alaska Department of Fish and Game, a public use "gratewalk" has been constructed on a ten foot wide easement along 178 feet of the Kenai River shoreline. Development of this "Soldotna Fishwalk" has included a contribution of \$125,000 from the non-profit Kenai River Sportfishing Association, through a popular Kenai River Classic Invitational Fishing Tournament. Purchase of the KEN 1038/Roberts (Schilling) parcel is necessary to secure the revocable easement and to further extend the "Fishwalk" along the riverfront some 463 feet further downstream.

Large numbers of people can fish from the boardwalk without harming the sensitive streamside habitat. Parcel KEN 1038, because of its location where the Sterling Highway crosses the river adjacent to the Visitors Center in downtown Soldotna provides highly visible and convenient access to large numbers of recreational anglers. Acquisition of this parcel will ease fishing pressures on more remote sections of the river where it is difficult to justify costly bank stabilization measures and boardwalks and will provide a good fishing location when resource managers must close other sections of the river so as to protect sensitive habitat. The parcel also provides a very high profile showcase example of responsible habitat protection that serves as a model for future shoreline developments.

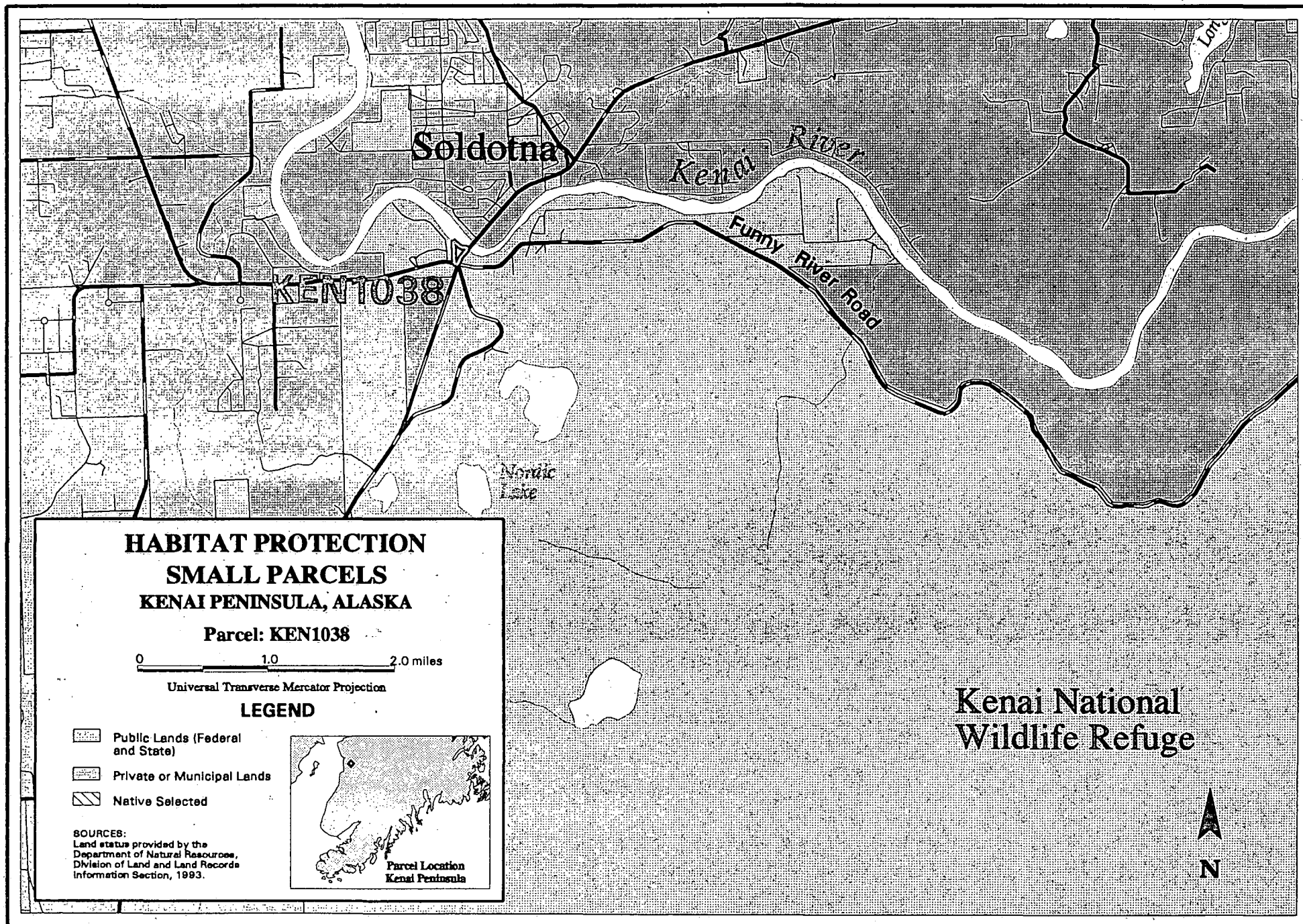
Restoration and long-term protection of the Kenai River will largely depend on the ability of resource agencies to work successfully with the public and the KEN 1038/Roberts (Schilling) parcel will play a key role in helping to create and shape a new conservation ethic along the river. Below Skilak Lake, where the greatest pressures exist, approximately two-thirds of the uplands along the river corridor are privately owned. While strategic acquisitions will play a critical role in protecting the river, diversion of damage (i.e., managed human use to prevent shoreline trampling) and creating awareness among river users and private landowners will likely play an even greater role in safeguarding the Kenai River. In this context, purchase of the KEN 1038/Roberts (Schilling) parcel and continued development of the Soldotna Fishwalk can play a vital role in the effort to assure a healthy future for the Kenai River. As a public-private initiative, this project has received

enormous public support and it continues to provide educational benefits that greatly exceed the direct investment costs.

Informal negotiations with the landowner has resulted in the identification of a reduced KEN 1038/Roberts (Schilling) parcel configuration of 3.34 acres in order to reduce costs while assuring protection of essential riparian values. The seller has indicated a willingness to sell this smaller property for \$698,600, a figure somewhat below fair market value. As originally proposed, the parcel contained 5.9 acres and was valued at \$1,304,000 by an approved fair market value appraisal. In addition to bank protection, the parcel was intended to provide a new location for the Kenai River Center. The Center provides a variety of permitting, educational and other services for river bank property owners, river guides, and others that are designed to promote protection of the river and adjacent habitat. In order to reduce the price to the Council for this land, the state negotiated a reduction in the acreage to 3.34 acres with a corresponding price reduction to \$698,000. This reduced acreage eliminates the possibility of using the parcel for the Kenai River Center. The state will expend substantial money to develop a nearby riverfront location for the Center, in effect, contributing substantial funds to this project.

Additional information concerning the KEN 1038 parcel, including the parcel benefits report and maps, are attached for your reference.

attachments



KEN 1038: Roberts Parcel

Acreage: 3.34 **Rank:** PMSC **Sponsor:** ADNR **Appraised Value:** \$698,000
Owner: Mr. and Mrs. Daniel Roberts
Location: Kenai River adjacent to the Kenai Peninsula Visitors Center in Soldotna

Parcel Description. This parcel is located on the Kenai River and is adjacent to the Kenai Peninsula Visitors Center. The parcel slopes gently to the Kenai River, has spruce and birch trees, and has about 600 feet of Kenai River frontage.

Restoration Benefits. Public ownership of this parcel will allow for managed access to the Kenai River and thereby protect habitat for pink salmon, Dolly Varden and recreation.

Key habitat and other attributes of the parcel include the following:

- *Pink salmon and Dolly Varden.* Pink salmon spawn and Dolly Varden spawn and rear in this stretch of the Kenai River. The streamside vegetation afforded by this and other parcels along the Kenai River stabilize riverbanks, protect water quality, moderate temperatures and provide cover for fish. Unfortunately, increasing bank fishing along the Kenai River is destroying riverside brush and grasses.
- *Recreation/tourism.* This parcel receives a high level of use for recreational fishing because of its location next to the Kenai Peninsula Visitors Center, its gentle slope toward the Kenai River, and the recent construction of a public use "fishwalk" on a 10-foot easement along the river.

Potential Threats. This parcel has the potential to be converted to profitable commercial uses. However, its primary threat to restoration results from uncontrolled access to the Kenai River, which damages habitat by trampling streambanks and denuding them of vegetation.

Appraised Value. The appraised value of the 5.9 acres parcel originally nominated is \$1,304,000. Subsequently, the state negotiated a reduction in the acreage to 3.34 acres with a corresponding price reduction to \$698,000. The highest and best use of this parcel is commercial development, such as an RV park, lodging facility or theme park.

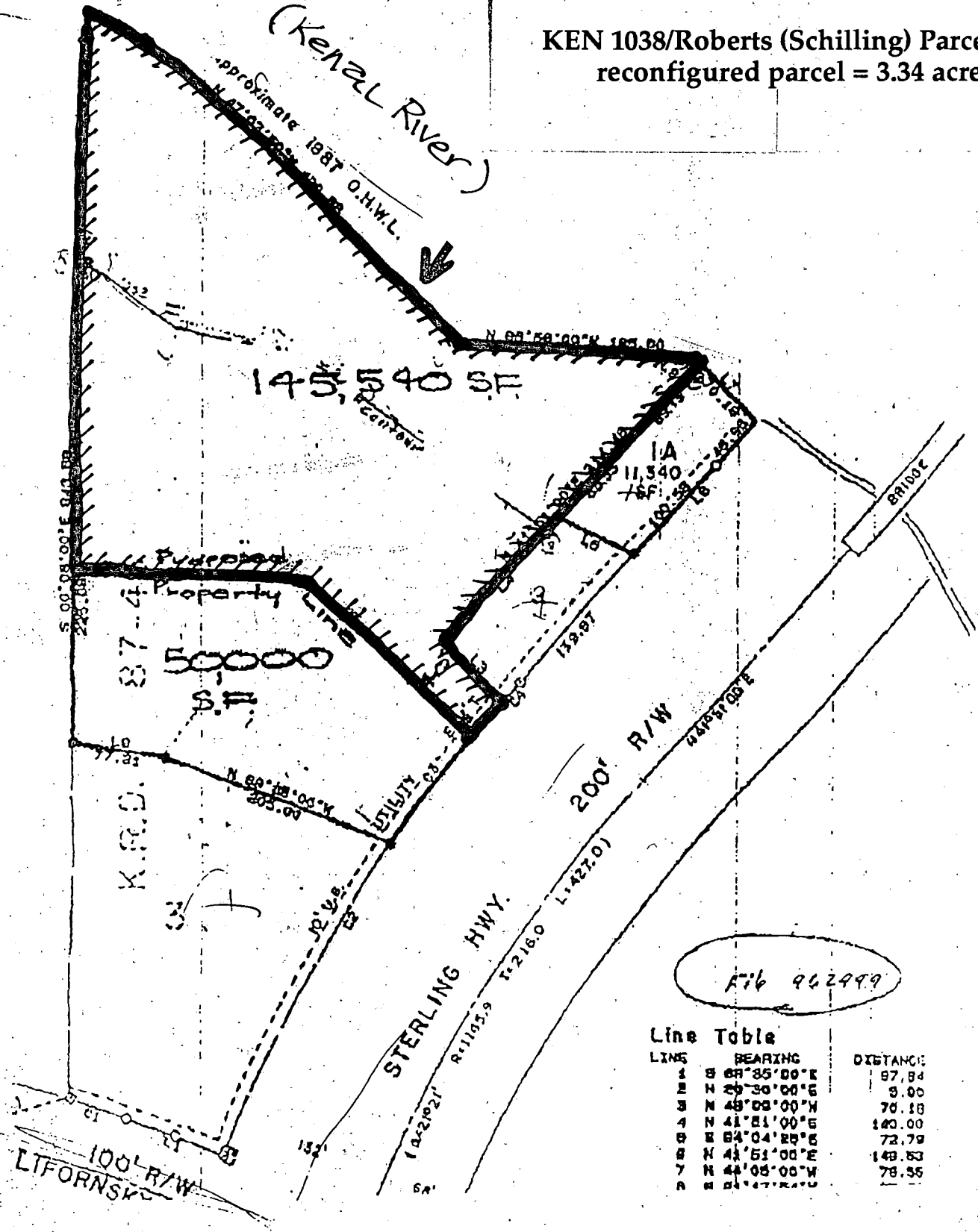
Proposed Management. The purpose of acquisition is to preserve and protect in perpetuity the ecological, natural, physical and scenic values of the subject property for the benefit of fish and wildlife resources and services that were injured in the *Exxon Valdez* oil spill. If this parcel is acquired, ADNR will manage it to protect environmentally sensitive river frontage and provide recreational opportunities for the public on the remainder of the parcel. The parcel will probably be classified "Habitat/Public Recreation Land."

Public Comment. The Restoration Office has received letters of support for acquisition of this parcel from the Kenai River Sportfishing Association, the City of Soldotna and Kenai Peninsula Borough.

FROM : Pana.

1/7/97

KEN 1038/Roberts (Schilling) Parcel
reconfigured parcel = 3.34 acres



1-7-97

Rebecca,

Molly says to include
this final work Plan
(please) next time
there's a mailing / packet
going to Trustee Council.

THANKS,

Sandra

Fiscal Year 1997 Work Plan

December 1996

Prepared by:

***Exxon Valdez Oil Spill
Trustee Council***

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Fiscal Year 1997 Work Plan

December 1996

**Prepared by:
Exxon Valdez Oil Spill
Trustee Council**

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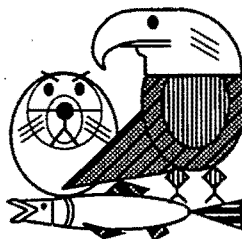
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For More Information...

For more information about projects in this Work Plan or for general information about the activities of the *Exxon Valdez* Oil Spill Trustee Council, contact the Council's Anchorage Restoration Office.

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Fiscal Year 1997 Work Plan

December 1996

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Dear Reader,

Each year since the 1991 settlement of a lawsuit concerning the 1989 *Exxon Valdez* oil spill, the *Exxon Valdez* Oil Spill Trustee Council has funded activities to restore the resources and services injured by the spill. In the settlement, Exxon Corporation agreed to pay the United States and the State of Alaska \$900 million over ten years. This Work Plan describes the research, monitoring, and general restoration projects funded by the Council for federal fiscal year 1997, and touches on the other activities of the Council as well.

In general, the collection of projects funded for FY 97 represents a continued emphasis on ecosystem-level analyses and understanding. Nearly half of the \$16 million in FY 97 Work Plan funding is for three ongoing ecosystem studies: the Sound Ecosystem Assessment, Project 97320; the Nearshore Vertebrate Predator Project, Project 97025; and the Alaska Predator Ecosystem Experiment, Project 97163. The ecosystem approach maximizes the efficiency of research and monitoring efforts and should lead to scientific results with wide application and lasting benefits.

In addition, the FY 97 Work Plan includes research projects designed to lead to long-term improvements in resource management (such as the pink salmon genome project, Project 97190), projects that monitor the recovery of injured resources (such as productivity monitoring of harlequin ducks, Project 97427), and what are known as general restoration projects that are designed to improve the rate of natural recovery by directly manipulating the environment (such as stocking of Solf Lake, Project 97256).

Overall, the FY 97 Work Plan reflects three priorities of the Trustee Council.

- First, the Council is committed to involving local communities in the restoration process. Local youth will continue to be involved in ongoing restoration efforts through Project 97210. A network of liaisons in oil spill communities will continue to participate in the Council's decision making process through Project 97052. Of the 64 research, monitoring, and general restoration projects approved by the Council for FY 97, 17 were submitted by spill-area communities or at the request of communities.

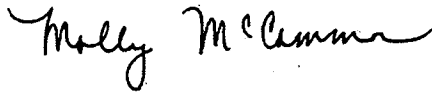
- Second, with the 10th anniversary of the spill approaching, the Council has increased its emphasis on informing the public of the progress of restoration. Project 97300 will begin the process of synthesizing across projects and among species and habitats the information collected to date on the recovery of injured species. In addition, funds have been approved for preparation of a number of manuscripts for publication in the scientific literature.

- Third, the Council has adopted a declining schedule of expenditures for the annual Work Plan to coincide with the final payment from Exxon Corporation in the year 2001. Specifically, funds authorized for research, monitoring, and general restoration projects have declined from \$18 million in FY 96 to \$16 million in FY 97. Administrative costs of the restoration program have declined from \$3.4 million in FY 96 to \$2.9 million in FY 97.

In addition to the research, monitoring, and general restoration projects described in this Work Plan, the Trustee Council funds habitat acquisition and sets aside funds in the Restoration Reserve for use after Exxon's final payment in the year 2001. Together, the activities funded by the Council represent the comprehensive, balanced approach to restoration outlined in the *Restoration Plan* adopted by the Trustee Council in November 1994.

Public interest and input are essential to the Trustee Council process. Please feel free to contact me if you would like more information on the activities of the Council or if you have comments and suggestions on the Council's restoration efforts.

Sincerely,



Molly McCammon
Executive Director

The Work Plan Process

Table 1 describes milestones in development of the FY 97 Work Plan. The work plan process began with a restoration workshop in January 1996. The Trustee Council made most of its funding decisions in late August so that projects could begin on October 1, the beginning of the federal fiscal year. A few funding decisions were deferred until December to allow time for review of results from the FY 96 field season or further deliberation over project objectives and work plan priorities.

Table 1. Milestones for FY 97 Work Plan

Jan. 16-18, 1996	Annual Restoration Workshop discussed results of FY 95 work and directions for FY 97.
Feb. 15, 1996	<i>Invitation to Submit Restoration Proposals for Federal Fiscal Year 1997</i> was issued.
April 15, 1996	Restoration Office received 120 research, monitoring, and general restoration proposals requesting \$33.2 million for FY 97.
May 16-18, 1996	Chief Scientist and core reviewers met to discuss the scientific and technical merits of proposals.
May 23, 1996	Executive Director discussed proposals with agencies, Chief Scientist, and Public Advisory Group representatives and drafted preliminary recommendations.
June 5, 1996	Public Advisory Group discussed proposals and preliminary recommendations and advised Executive Director.
June 24, 1996	<i>FY 97 Draft Work Plan</i> was distributed for public comment.
Aug. 6, 1996	Public hearing was held on <i>FY 97 Draft Work Plan</i> .
Aug. 7, 1996	Public Advisory Group met to advise Trustee Council on final work plan.
Aug. 28, 1996	Trustee Council approved 58 research, monitoring, and general restoration projects totaling \$15,390,300 for <i>FY 97 Final Work Plan</i> , and deferred projects that required further review or deliberation.
Oct. 1, 1996	Fiscal year 1997 (FY 97) began.
Dec. 6, 1996	Trustee Council approved 6 additional research, monitoring, and general restoration projects for <i>FY 97 Final Work Plan</i> . This action brought the FY 97 authorization total to \$15,999,500.

Summary of Fiscal Year 1997 Projects

For FY 97, the Trustee Council received 120 research, monitoring, and general restoration proposals requesting a total of \$33,195,200. In August and December 1996, the Council authorized 64 projects totaling \$15,999,500. The table on the following page summarizes the Trustee Council's funding decisions by "resource cluster," as well as the expected cost of completing the projects authorized in FY 97. (Note: Regarding future year costs, a "\$0" in the table means that no funding is expected. A blank space means that the estimated funding level is not known or that a decision on future funding has not been made.)

Many of the projects funded are the continuation of efforts also funded in FY 96. As illustrated in Table 2, several new projects were also funded.

Table 2. New and Continuing Projects

	Number of Projects Funded	Total Cost of Projects Funded
New Projects	14	\$1,038,300
Continuing Projects	50	\$14,961,200

In addition to funding research, monitoring, and general restoration projects, the Trustee Council authorized funds for the administrative costs of the restoration program (\$2.86 million, primarily for public information, independent scientific review, and operating expenses), habitat protection support (\$1.29 million, for services such as negotiations, land surveys, and appraisals), and the fourth \$12 million payment to the Restoration Reserve. The Council also authorized funds for two capital construction projects. These are discussed beginning on page 23 of this document.

Table 3. Summary of Funding by Resource Cluster

Resource Cluster	FY 97 Approved	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	Total FY97-02
Pink Salmon	\$1,921.7	\$966.3	\$293.4	\$32.0	\$3,213.4
Pacific Herring	\$899.6	\$493.6	\$0.0	\$0.0	\$1,393.2
SEA and Related Projects	\$3,733.6	\$2,062.2	\$115.0	\$75.0	\$5,985.8
Sockeye Salmon	\$462.8	\$0.0	\$0.0	\$0.0	\$462.8
Cutthroat Trout and Dolly Varden	\$266.5	\$108.0	\$0.0	\$0.0	\$374.5
Marine Mammals	\$810.6	\$308.1	\$50.0	\$0.0	\$1,168.7
Nearshore Ecosystem	\$2,232.0	\$1,753.7	\$524.8	\$224.4	\$4,734.9
Seabird/Forage Fish and Related Projects	\$2,366.7	\$1,958.1	\$1,903.8	\$189.2	\$6,417.8
Archaeological Resources	\$231.2	\$201.3	\$158.9	\$415.0	\$1,006.4
Subsistence	\$1,433.6	\$1,332.4	\$441.6	\$1,054.2	\$4,261.8
Reduction of Marine Pollution	\$267.5	\$0.0	\$0.0	\$0.0	\$267.5
Habitat Improvement	\$667.2	\$759.6	\$0.0	\$0.0	\$1,426.8
Ecosystem Synthesis	\$64.9	\$260.0			\$324.9
Project Management	\$641.6	\$560.0	\$480.0	\$960.0	\$2,641.6
Total Research, Monitoring, and General Restoration Projects:					
	\$15,999.5	\$10,763.3	\$3,967.5	\$2,949.8	\$33,680.1
Habitat Protection/Acquisition Support	\$1,282.6	\$770.0	\$565.0	\$215.0	\$2,832.6
Public Information/Science Mgt./ Admin.	\$2,857.1	\$2,800.0	\$2,500.0	\$4,700.0	\$12,857.1
Restoration Reserve	\$12,000.0	\$12,000.0	\$12,000.0	\$36,000.0	\$72,000.0
Other Projects	\$1,713.5	\$75.0	\$0.0	\$0.0	\$1,788.5
Total All Activities:					
	\$33,852.7	\$26,408.3	\$19,032.5	\$43,864.8	\$123,158.3

Description of FY 97 Projects

This section describes the research, monitoring, and general restoration projects funded by the Trustee Council for FY 97. It also includes a brief description of the Council's other activities.

RESEARCH, MONITORING, AND GENERAL RESTORATION PROJECTS

The research, monitoring, and general restoration projects described on the following pages are arranged by "resource cluster." Each cluster description includes the Trustee Council's restoration strategies (which were established in the *Restoration Plan* and are updated as needed each year through the annual work plan), the projects authorized to implement those strategies, and the expected cost of completing the projects authorized in FY 97. (Note: Regarding future year costs, "\$0" means that no funding is expected. A blank space means that the estimated funding level is not known or that a decision on future funding has not been made.)

Appendix A contains a numerical listing of all projects funded by the Trustee Council. It contains the text of the Chief Scientist's evaluation and the Trustee Council's decision for each project. It also indicates who proposed each project, which Trustee agency is responsible for project management, and whether the project is continuing (i.e., was also funded by the Council in FY 96) or new.

A detailed project description (DPD) and budget are on file at the Anchorage Restoration Office for each of the projects summarized in this section.

Pink Salmon

Restoration Strategies for Fiscal Year 1997

Research and Monitor the Toxic Effects of Oil

- Continue egg mortality project (97191A), which is monitoring recovery of pink salmon embryos and examining whether genetic damages occurred as a result of exposure to oil during early life stages.
- Continue straying project (97076), which is examining effects of oil exposure during embryonic development on the straying, marine survival, and gamete viability of pink salmon.
- Conduct spawning habitat project (97194), which will examine level of oil in pink salmon streams following the spill relative to embryo mortalities.

Provide Stock Separation and Management Information

- Continue coded wire tag project (97186), to ensure two years of overlap with otolith thermal mass marking, discussed below.
- Continue otolith thermal mass marking project (97188), which is more effective than coded wire tags at marking fish for management purposes.
- Continue genetic stock identification project (97196), which is examining the geographic extent of genetic differences in Prince William Sound pink salmon.
- Continue genetic linkage project (97190), which is constructing a genetic map to aid understanding of straying, stock structure, and marine survival of pink salmon.

Supplement Populations

- Continue Little Waterfall barrier bypass project (97139A1), which in FY 97 will evaluate the effectiveness of decreased grades and added resting pools at increasing spawning habitat for pink and coho salmon.
- Continue Port Dick Creek habitat project (97139A2), which in FY 97 will evaluate the effectiveness of excavation of the spawning tributary at increasing spawning habitat for pink and chum salmon.
- Complete Montague habitat project (97139C1), which in FY 97 will evaluate the effectiveness of instream structures at increasing spawning habitat for pink and chum salmon in three streams on Montague Island.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97076	Effects of Oil on Straying	\$618.8	\$234.6	\$0.0	\$0.0	\$853.4
97139A1	Little Waterfall Barrier Bypass	\$26.4		\$0.0	\$0.0	\$26.4
97139A2	Port Dick Spawning Channel	\$76.5	\$49.7	\$39.7	\$32.0	\$197.9
97139C1	Montague Riparian Rehab.	\$9.3	\$0.0	\$0.0	\$0.0	\$9.3
97186	Coded Wire Tag Recovery	\$273.8	\$279.4	\$90.0	\$0.0	\$643.2
97188	Otolith Thermal Mass Marking	\$120.1	\$108.4	\$55.0	\$0.0	\$283.5
97190	Genome Linkage Map	\$254.5				\$254.5
97191A	Oil Related Embryo Mortality	\$208.5	\$164.2	\$58.7	\$0.0	\$431.4
97194	Spawning Habitat Recovery	\$138.3		\$0.0	\$0.0	\$138.3
97196	Genetic Structure	\$195.5	\$130.0	\$50.0	\$0.0	\$375.5
TOTAL		\$1,921.7	\$966.3	\$293.4	\$32.0	\$3,213.4

NOTE: Project 97320, a multi-year ecological investigation of the factors influencing populations of Prince William Sound pink salmon and Pacific herring, is discussed in the Sound Ecosystem Assessment cluster.

Pacific Herring

Restoration Strategies for Fiscal Year 1997

Investigate Causes of the Crash

- Continue herring disease project (97162), which is investigating the potential link between oil exposure and disease in Pacific herring, and between disease and the Pacific herring population decline in Prince William Sound.

Provide Management Information

- Continue herring natal habitats project (97166), which is monitoring the abundance of Pacific herring.
- Continue genetic stock identification project (97165), which is addressing questions about the genetic composition of Prince William Sound Pacific herring in relation to other North Pacific populations.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97162	Disease Factors	\$517.7	\$437.6	\$0.0	\$0.0	\$955.3
97165	Genetic Discrimination	\$41.6	\$56.0	\$0.0	\$0.0	\$97.6
97166	Herring Natal Habitats	\$340.3			\$0.0	\$340.3
TOTAL		\$899.6	\$493.6	\$0.0	\$0.0	\$1,393.2

NOTE: Project 97320, a multi-year ecological investigation of the factors influencing populations of Prince William Sound pink salmon and Pacific herring, is discussed in the Sound Ecosystem Assessment cluster.

Sound Ecosystem Assessment (SEA) and Related Projects

Restoration Strategies for Fiscal Year 1997

Investigate Ecological Factors

- Continue Sound Ecosystem Assessment (97320), which is exploring and developing models of the processes influencing productivity of pink salmon and Pacific herring in Prince William Sound.

Monitor Pristane Levels

- Continue pristane monitoring project (97195), which is collecting and measuring pristane in mussels as a measure of marine productivity.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97195	Pristane Monitoring	\$115.3	\$115.0	\$115.0	\$75.0	\$420.3
97320	SEA	\$3,618.3	\$1,947.2			\$5,565.5
TOTAL		\$3,733.6	\$2,062.2	\$115.0	\$75.0	\$5,985.8

Sockeye Salmon

Restoration Strategies for Fiscal Year 1997

Provide Stock Separation and Management Information

- Complete sockeye genetics project (97255), which has developed improved techniques for sockeye stock assessment and identification.

Research Overescapement

- Complete Kenai/Kodiak overescapement project (97258A), which is examining the mechanism and extent of overescapement injury to the Kenai River system and Red and Akalura lakes on Kodiak Island.
- Complete Akalura Lake project (97251), which is conducting smolt emigration studies on Akalura Lake to determine the recovery status of sockeye in the Akalura system.

Supplement Populations

- Complete Coghill Lake fertilization project (97259), which has brought primary and secondary productivity and smolt production to acceptable levels, and produced adult escapements within the optimum range in the Coghill Lake system.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97251	Akalura Lake	\$43.7	\$0.0	\$0.0	\$0.0	\$43.7
97255	Sockeye Genetics	\$158.3	\$0.0	\$0.0	\$0.0	\$158.3
97258A	Sockeye Overescapement	\$214.0	\$0.0	\$0.0	\$0.0	\$214.0
97161	Coghill Lake Fertilization	\$46.8	\$0.0	\$0.0	\$0.0	\$46.8
TOTAL		\$462.8	\$0.0	\$0.0	\$0.0	\$462.8

NOTE: Additional projects that benefit sockeye salmon are discussed in other clusters: Project 97180, which is restoring habitat along the Kenai River, is in the habitat improvement cluster. Project 97256B, which will stock Solf Lake near Chenega Bay with sockeye, is in the subsistence cluster. One additional project, 97254, which would stock Delight and Desire lakes with sockeye salmon, is still under consideration by the Trustee Council.

Cutthroat Trout and Dolly Varden

Restoration Strategies for Fiscal Year 1997

Research and Monitor Populations

- Continue population research project (97145), which is determining the relationship between resident and anadromous forms of Dolly Varden and cutthroat trout.

Supplement Populations

- Complete habitat improvement project (97043B), which in FY 97 will evaluate the effectiveness of habitat improvement structures at increasing populations of cutthroat trout and Dolly Varden at four sites in Prince William Sound.

Develop Restoration Strategies

- Conduct inventory project (97302), which will investigate a number of remote lakes and streams in Prince William Sound to determine whether cutthroat trout and Dolly Varden are present.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97043B	Habitat Improvement	\$24.0	\$8.0	\$0.0	\$0.0	\$32.0
97145	Anadromous/Resident Forms	\$229.7	\$100.0	\$0.0	\$0.0	\$329.7
97302	PWS Inventory	\$12.8	\$0.0	\$0.0	\$0.0	\$12.8
TOTAL		\$266.5	\$108.0	\$0.0	\$0.0	\$374.5

Marine Mammals

Restoration Strategies for Fiscal Year 1997

Monitor Harbor Seals and Research the Decline in Harbor Seals

- Continue harbor seal research project (97001), which is documenting the body condition and nutritional status of harbor seals.
- Continue harbor seal monitoring project (97064), which is examining possible causes of the decline in harbor seals including disease, reproduction, food limitations, and killer whale predation.
- Continue stable isotope study (97170), which is assessing food webs in Prince William Sound in an effort to determine the reasons for the decline of harbor seals.

Monitor Killer Whales

- Continue killer whale investigation (97012-BAA), which is analyzing the long-term effects of the oil spill on resident and transient pods of killer whales in Prince William Sound.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97001	Harbor Seal Condition and Health Status	\$192.0	\$48.1	\$0.0	\$0.0	\$240.1
97012	Killer Whale Investigation	\$157.5				\$157.5
97064	Harbor Seal Monitoring	\$317.8	\$150.0	\$50.0	\$0.0	\$517.8
97170	Isotope Ratio Studies	\$143.0	\$110.0	\$0.0	\$0.0	\$253.3
TOTAL		\$810.6	\$308.1	\$50.0	\$0.0	\$1,168.7

NOTE: An additional project that benefits harbor seals is discussed in the Subsistence Cluster: Project 97244, which enables Native hunters to provide harbor seal samples for ongoing restoration projects.

Nearshore Ecosystem

Restoration Strategies for Fiscal Year 1997

Monitor Recovery

- Continue harlequin duck monitoring project (97427), which is monitoring the reproductive success, population structure, and productivity of harlequin ducks.
- Prepare for publication results of sea otter population biology studies (97223).

Research Mechanisms Limiting Recovery

- Continue nearshore vertebrate predator project (97025), which is examining whether recruitment processes, continuing exposure to oil, or food availability are constraining the recovery of sea otters, river otters, harlequin ducks, and pigeon guillemots.
- Continue harlequin duck genetics project (97161), which is examining whether harlequin recovery can occur only as a function of recruitment or also through immigration of harlequins from unoiled areas.

Monitor the Fate and Persistence of Oil

- Continue hydrocarbon database project (97290), which is analyzing hydrocarbon samples collected through other Trustee Council projects.
- Prepare for publication results of mussel bed restoration project (97090).
- Complete report writing on microbial and chemical sediment project (97026).

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97025	Nearshore Vertebrate Predators	\$1,736.3	\$1,669.4	\$450.0	\$0.0	\$3,855.7
97026	Microbial Sediments Report	\$15.1	\$0.0	\$0.0	\$0.0	\$15.1
97090	Mussel Bed Publications	\$10.0	\$0.0	\$0.0	\$0.0	\$10.0
97161	Harlequin Duck Genetics	\$98.8	\$9.5	\$0.0	\$0.0	\$108.3
97223	Sea Otter Publications	\$43.0	\$0.0	\$0.0	\$0.0	\$43.0
97290	Hydrocarbon Database	\$76.3	\$74.8	\$74.8	\$224.4	\$450.3
97427	Harlequin Duck Monitoring	\$252.5				\$252.5
TOTAL		\$2,232.0	\$1,753.7	\$524.8	\$224.4	\$4,734.9

Seabird/Forage Fish and Related Projects

Restoration Strategies for Fiscal Year 1997

Research Mechanisms Limiting Recovery

- Continue Alaska Predator Ecosystem Experiment (APEX, 97163), which is investigating link between availability of forage fish and productivity of seabirds.
- Begin marbled murrelet project (97231), which will investigate link between forage fish and marbled murrelet productivity and will complement APEX project.
- Begin genetics project (97169), which will study relationships between different populations of common murres, marbled murrelets, and pigeon guillemots.
- Begin sand lance project (97306), which will study basic ecology, distribution, and demographics of this forage fish in lower Cook Inlet.

Research and Monitor Populations

- Continue Kittlitz's murrelet project (97142-BAA), which is evaluating abundance, distribution, habitat use, productivity, and trophic position of this seabird.
- Continue common murre project (97144), which is monitoring populations.
- Prepare for publication results of marine bird survey project (97159), which gathered information on status and recovery of seabirds in Prince William Sound.
- Curate remaining seabirds salvaged from the oil spill (97167-BAA).

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97142	Kittlitz's Murrelets	\$188.5		\$0.0	\$0.0	\$188.5
97144	Common Murres	\$73.8	\$50.0	\$0.0	\$0.0	\$123.8
97159	Marine Bird Surveys	\$60.1				\$60.1
97163	APEX	\$1,800.0	\$1,800.0	\$1,800.0	\$176.4	\$5,576.4
97167	Seabird Curation	\$32.1	\$0.0	\$0.0	\$0.0	\$32.1
97169	Genetics	\$59.4	\$78.1	\$83.8	\$12.8	\$234.1
97231	Marbled Murrelet Productivity	\$120.0				\$120.0
97306	Sand Lance Ecology	\$32.8	\$30.0	\$20.0	\$0.0	\$82.8
TOTAL		\$2,366.7	\$1,958.1	\$1,903.8	\$189.2	\$6,417.8

Archaeological Resources

Restoration Strategies for Fiscal Year 1997

Monitor Archaeological Sites

- Continue index site monitoring project (97007A), which is periodically checking on sample ("index") sites to detect further damage from vandalism and looting and to gauge the effect of oiling on archaeological deposits.

Restore and Protect Archaeological Sites

- Continue site stewardship project (97149), which is providing training and coordination for volunteers to monitor vandalized archaeological sites.
- Prepare for publication and public presentation results of site restoration project (97007B).

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97007A	Index Site Monitoring	\$145.0	\$135.0	\$145.0	\$415.0	\$840.0
97007B	Site Restoration	\$19.9	\$0.0	\$0.0	\$0.0	\$19.9
97149	Site Stewardship	\$66.3	\$66.3	\$13.9	\$0.0	\$146.5
TOTAL		\$231.2	\$201.3	\$158.9	\$415.0	\$1,006.4

Note: In November 1996 the Restoration Office received the final report for the archaeological restoration planning project funded by the Trustee Council in FY 96 (96154). The report addresses options for artifact repositories, display facilities, traveling exhibits, and site stewardship programs. After legal and public review, the Council may decide to issue a special invitation for archaeological restoration projects. The review process will include public meetings in affected communities in Prince William Sound and Lower Cook Inlet in early 1997.

Subsistence

Restoration Strategies for Fiscal Year 1997

Restore Injured Subsistence Resources

- Complete octopus project (97009D), which is determining the local density of octopus and identifying the characteristics of good octopus habitat.

Enhance or Replace Injured Subsistence Resources

- Continue Tatitlek remote release project (97127), which is creating a coho salmon run near the community of Tatitlek.
- Complete Chenega remote release project (97272), which is creating a chinook salmon run near the community of Chenega Bay.
- Continue Port Graham pink salmon project (97225), which is increasing the availability of pink salmon near the community of Port Graham.
- Begin Kametlook River project (97247), which will enhance a coho salmon run near the community of Perryville.
- Continue Solf Lake stocking project (97256B), which is stocking Solf Lake near the community of Chenega Bay with sockeye salmon.
- Continue Eastern PWS streams project (97220), which is installing log structures in streams near the Native Village of Eyak in an effort to increase wild salmon production.
- Begin Port Graham streams project (97263), which will perform habitat improvement techniques to enhance salmon streams near the community of Port Graham.
- Continue clam restoration project (97131), which is working to reestablish populations of littleneck clams near Port Graham, Nanwalek, Tatitlek, Chenega Bay, and Ouzinkie.

Increase Involvement of Subsistence Users in the Restoration Process

- Continue community involvement project (97052A), which is facilitating communication and interaction among the Trustee Council, scientists, and residents of communities impacted by the oil spill.
- Begin traditional ecological knowledge (TEK) project (97052B), which will explore and facilitate the use of TEK in the restoration process.
- Continue youth area watch project (97210), which is involving local junior high and high school students in ongoing restoration projects.
- Continue community-based harbor seal project (97244), which is enabling Native hunters to provide harbor seal samples for ongoing restoration projects.

- Begin elders-youth conference project (97286), which will plan a conference for subsistence users and EVOS researchers to be held in FY 98.
- Complete harbor seal video project (97214), which will communicate local knowledge and observations about harbor seals to the scientific community and others.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97009D	Octopus Survey	\$48.0	\$0.0	\$0.0	\$0.0	\$48.0
97052A	Community Involvement	\$248.4	\$250.0	\$250.0	\$750.0	\$1,498.4
97052B	Traditional Knowledge	\$94.5				\$94.5
97127	Tatitlek Coho Salmon Release	\$11.1	\$12.0	\$12.0	\$0.0	\$35.1
97131	Clam Restoration	\$365.0	\$365.0			\$730.0
97210	Youth Area Watch	\$150.0	\$150.0			\$300.0
97214	Harbor Seal Documentary	\$12.1	\$0.0	\$0.0	\$0.0	\$12.1
97220	Eastern PWS Salmon Habitat	\$115.0	\$12.0	\$0.0	\$0.0	\$127.0
97225	Port Graham Pinks	\$74.4	\$75.0	\$75.0	\$75.0	\$299.4
97244	Community Harbor Seal	\$114.9	\$85.0	\$0.0	\$0.0	\$199.9
97247	Kametolook River	\$31.4	\$13.8	\$14.1	\$44.1	\$103.4
97256B	Solf Lake Stocking	\$50.0	\$143.5	\$78.5	\$185.1	\$457.1
97263	Port Graham Streams	\$58.0	\$115.0	\$12.0	\$0.0	\$185.0
97272	Chenega Chinook Release	\$45.0	\$0.0	\$0.0	\$0.0	\$45.0
97286	Elders/Youth Conference	\$15.8	\$111.1	\$0.0	\$0.0	\$126.9
TOTAL		\$1,433.6	\$1,332.4	\$441.6	\$1,054.2	\$4,261.8

Note: Additional projects that benefit subsistence are discussed in other clusters. In general, all projects which address resources used by subsistence harvesters are subsistence restoration projects. One additional project, 97248, which would collect indigenous knowledge on herring and other forage fish, is still under consideration by the Trustee Council.

Reduction of Marine Pollution

Restoration Strategies for Fiscal Year 1997

Reduce Marine Pollution

- Develop island-wide waste management plan for Kodiak Island (project 97304), to remove chronic sources of marine pollution and solid waste that may be affecting recovery of injured resources.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97304	Kodiak Waste Management Plan	\$267.5	\$0.0	\$0.0	\$0.0	\$267.5

NOTE: Project 97115, which will implement a portion of the Prince William Sound waste management plan, is discussed in the Other Projects section.

Habitat Improvement Projects

Restoration Strategies for Fiscal Year 1997

Protect and Restore Habitat

- Continue Kenai habitat restoration project (97180), which is restoring degraded habitat along the banks of the Kenai River.
- Conduct Valdez Duck Flats project (97230), which will develop a concept plan for protection of habitat on the Duck Flats.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97180	Kenai Habitat Restoration	\$599.4	\$759.6	\$0.0	\$0.0	\$1,359.0
97230	Valdez Duck Flats	\$67.8	\$0.0	\$0.0	\$0.0	\$67.8
TOTAL		\$667.2	\$759.6	\$0.0	\$0.0	\$1,426.8

NOTE: The Trustee Council's program to acquire land and conservation easements as a means of protecting the habitat of injured resources is discussed in the Habitat Protection and Acquisition section.

Ecosystem Synthesis

Restoration Strategies for Fiscal Year 1997

Prepare a Model of Research Results

- Begin synthesis project (97300), which will work with EVOS principal investigators and ecological modelers to facilitate synthesis of data collected through the restoration process into mathematical and written descriptions of the spill area ecosystem and how it changes in response to anthropogenic and natural events.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97300	Ecosystem Synthesis	\$64.9	\$260.0			\$324.9

Project Management

In FY 97, the costs of project management are identified in project 97250. Project management is provided by resource managers in the six trustee agencies and provides essential accountability to the work plan process. It includes such functions as tracking the progress of restoration projects; ensuring that projects meet their stated goals, objectives, and schedules; monitoring project expenditures; and ensuring that all reports and other contract deliverables are properly performed. Prior to FY 97, project management funds were included in each individual restoration project's budget.

As illustrated below, the estimates of future years' funding reflect a reduction in project management effort consistent with the decline in the annual funding targets for the overall work plan.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97250	Project Management	\$641.6	\$560.0	\$480.0	\$960.0	\$2,641.6

HABITAT PROTECTION AND ACQUISITION

The *Exxon Valdez* Trustee Council funds the acquisition and protection of land in order to protect the habitat of injured resources and services. Project 97126 continues the support services necessary for these land acquisitions, such as title reports, appraisals, on-site inspections, hazardous materials surveys, land surveys and timber cruises.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97126	Habitat Acquisition Support	\$1,282.6	\$770.0	\$565.0	\$215.0	\$2,832.6

As of December 1996, the Council has committed \$210.3 million to protect 491,000 acres of land in large parcels, including inholdings in Kachemak Bay State Park, land adjacent to Seal Bay/Tonki Cape on Afognak Island, commercial timber rights on land along Orca Narrows, a parcel on Shuyak Island, and lands owned by Akhiok-Kaguyak, Inc., Old Harbor Native Corporation, Koniag, Inc., Chenega Corporation, and Tatitlek Corporation. Final acceptance of the offer from the Tatitlek Corporation depends on a vote of shareholders. Negotiations continue with five landowners to protect additional habitat. The landowners are Eyak Corporation, Port Graham Corporation, English Bay Corporation, Afognak Joint Venture, and Koniag, Inc.

The Council has also authorized offers to purchase 37 small parcels of land at appraised fair market value, a contribution of \$4 million to acquire a package of lands owned by the Kenai Natives Association, and up to \$1 million to acquire key waterfront parcels that were forfeited to the Kodiak Island Borough for tax delinquency. Fourteen additional small parcels are under active consideration.

Interests in the lands protected by the Council range from acquisition of fee simple title to various forms of conservation easements.

PUBLIC INFORMATION/SCIENCE MANAGEMENT/ADMINISTRATION

The cost of the administrative functions necessary to efficiently implement the restoration program (project 97100) continue to decline in FY 97 – from \$4.2 million in FY 95 to \$3.4 million in FY 96 to \$2.9 million in FY 97. Further reductions are expected through FY 2002, consistent with the planned transition to the Restoration Reserve in FY 2003.

Project 97100 includes funds for the independent scientific review of project proposals and results, the Trustee Council's 17-member Public Advisory Group (PAG), the Oil Spill Public Information Center (OSPIC), the Council's Annual Restoration Workshop, public meetings and other communication efforts such as the Council's newsletter and radio program, operations and staff support for the Trustee Council itself, an annual financial audit, and a variety of smaller items.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97100	Public Info/Science Mgt/ Administration	\$2,857.1	\$2,800.0	\$2,500.0	\$4,700.0	\$12,857.1

RESTORATION RESERVE

In recognition of the fact that complete recovery from the oil spill may not occur for decades, the Trustee Council established the Restoration Reserve to hold funds to be used for restoration after the last annual payment is received from Exxon Corporation in September 2001. For FY 97, the Trustee Council deposited \$12 million in the reserve account. This deposit, the Council's fourth, brings the total in the account to \$48 million. Annual deposits of \$12 million in each of the next five years would provide a reserve of \$108 million plus interest.

Allocation of the funds to specific restoration activities has not yet been made. During FY 97, Trustee Council staff will develop options for the future management and use of the reserve account. During the fall and winter of 1998, public workshops on the options will be conducted throughout the spill area as well as in Anchorage, Fairbanks, and Juneau. The Council is scheduled to make a decision on the future of the Restoration Reserve by March 1999.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97424	Restoration Reserve	\$12,000.0	\$12,000.0	\$12,000.0	\$36,000.0	\$72,000.0

NOTE: During the fiscal years 1994 through 1996, the Trustee Council deposited \$36 million in the Restoration Reserve, bringing today's total to \$48 million and the projected total in the year 2002 to \$108 million plus interest.

OTHER PROJECTS

In addition to the projects and activities described on the preceding pages, the Trustee Council also authorized funds for two proposals submitted for capital construction projects. These "other projects" are summarized below, and described in more detail in Appendix A.

- Continue Sound Waste Management Plan project (97115), which in FY 97 will construct "environmental operations stations" in communities in Prince William Sound to facilitate proper disposal of oily and solid wastes.
- Begin fish pass project (97197), which will construct a fish pass at the Alaska SeaLife Center in Seward to be used for propagation of experimental runs of salmon for genetic studies to be conducted at the Center.

Funding Authorized for Fiscal Year 1997

Project Number and Title		FY 97 Authorized	FY 98 Estimate	FY 99 Estimate	FY 00-02 Estimate	TOTAL
97115	Sound Waste Management Plan	\$1,167.9	\$75.0	\$0.0	\$0.0	\$1,242.9
97197	SeaLife Center Fish Pass	\$545.6	\$0.0	\$0.0	\$0.0	\$545.6
TOTAL		\$1,713.5	\$75.0	\$0.0	\$0.0	\$1,788.5

Note: One additional capital construction project, 97151, which would expand the Prince William Sound Science Center in Cordova, is still under consideration by the Trustee Council.

Appendix A -- Description of Projects and Trustee Council Action

How to read Appendix A:

Proposer	The individual, organization, or Trustee agency that submitted the project proposal.
Lead Agency	The Trustee agency (DOI, NOAA, USFS, ADEC, ADF&G, or ADNR) to which the project has been assigned for project management purposes.
New or Cont'd.	What year FY 97 is in the Trustee Council's funding of the project, followed by the total number of years Council funding is expected to be sought (e.g., 3rd year of a 5-year project).
FY 97 Approved	The amount of funding approved by the Trustee Council for FY 97.
FY 98 Estimate	For multi-year projects, the estimated project cost for FY 98.
FY 99 Estimate	The estimated project cost for FY 99.
FY 00-02 Estimate	Sum of the estimated project cost from FY 2000 to FY 2002.
FY 97-02 Estimate	Sum of the estimated project cost for all years, beginning in FY 97 and ending with FY 2002 -- or the project's completion, whichever is sooner.
Project Abstract	A brief summary of the project.
Chief Scientist's Recommendation	A summary of the Chief Scientist's review of the project's technical merit.
Trustee Council Action	An explanation of the Trustee Council's decision on project funding for FY 97.

APPENDIX A: DESCRIPTION OF PROJECTS AND TRUSTEE COUNCIL ACTION**Page A-1**

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97001	Recovery of Harbor Seals From EVOS: Condition and Health Status	M. Castellini/UAF	ADFG	Cont'd 3rd yr. 4 yr. project	\$192.0	\$48.1	\$0.0	\$0.0	\$240.1
<u>Project Abstract</u> This project focuses on the health of harbor seals, a marine mammal species that is not recovering in Prince William Sound. Personnel from the University of Alaska in cooperation with the Alaska Department of Fish and Game will continue and expand work with harbor seals to assess their health, blood metabolites, blubber chemistry and size in relation to their ecological and nutritional requirements. The project addresses potential health and nutritional problems that may be impeding harbor seal recovery. In FY 97, the project greatly expands collaborative work with Native hunters through the Alaska Native Harbor Seal Commission and will initiate work in FY 98 at the Alaska SeaLife Center.		<u>Chief Scientist's Recommendation</u> This ongoing project is measuring the body condition and health of harbor seals in the oil spill area. Considerable progress is being made and an additional year of data in FY 97 is needed. Fund.		<u>Trustee Council Action</u> Fund. This project will document the body condition and nutritional status of harbor seals to help explain the decline in the Prince William Sound harbor seal population. This project complements Project /064 and will enable managers, subsistence hunters, and others to focus their concerns and efforts on the most probable sources of population decline. In FY 97, the focus of this project will shift to the health of juvenile harbor seals.					
97007A	Archaeological Index Site Monitoring	D. Reger/ADNR		Cont'd 3rd yr. 8 yr. project	\$145.0	\$135.0	\$145.0	\$415.0	\$840.0
<u>Project Abstract</u> Monitoring of archaeological sites on public land injured by vandalism and oiling will concentrate on a sample of index sites in the three regions of the spill. Oiled sites will be tested for reintroduced oil. The project will end in FY 99 if monitoring shows no continued injury.		<u>Chief Scientist's Recommendation</u> Conceptually, this is a good project that continues to address "recovery" at injured archaeological sites. This project should be funded as now proposed.		<u>Trustee Council Action</u> Fund continuation of index site monitoring program, which provides for monitoring of archaeological sites injured by vandalism and oiling. The original proposal also included monitoring an additional four sites on Kodiak and Shuyak islands newly acquired through the Trustee Council's habitat protection program. This concept has merit, but warrants further deliberation.					

APPENDIX A: DESCRIPTION OF PROJECTS AND TRUSTEE COUNCIL ACTION**Page A-2**

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97007B-CLO	Site Specific Archaeological Restoration	L. Yarborough/USFS	USFS	Cont'd 3rd yr. 3 yr. project	\$19.9	\$0.0	\$0.0	\$0.0	\$19.9
<u>Project Abstract</u> This project will provide funding for an additional phase of the Forest Service's archaeological restoration at sites SEW-440 and SEW-488. The final report on the restoration project having been completed in FY 96, this phase of the project will complete presentation of the results to the professional and general public. The Principal Investigator will disseminate the findings of the excavations of SEW-440 and SEW-488 through a peer-reviewed journal article and presentations of results at a major professional conference and to community groups.		<u>Chief Scientist's Recommendation</u> This is an on-going and successful project to assess and extract information from archaeological sites. This project deserves continued support. Fund.		<u>Trustee Council Action</u> Fund. This project will disseminate the findings of the excavations of SEW-440 and SEW-488 through a peer-reviewed journal article and presentations of results at a major professional conference and to community groups. These excavations provided significant insights into early occupants of Prince William Sound.					
97009D-CLO	Survey of Octopuses in Intertidal Habitats	D. Scheel/Prince William Sound Science Center		Cont'd 3rd yr. 3 yr. project	\$48.0	\$0.0	\$0.0	\$0.0	\$48.0
<u>Project Abstract</u> This project addresses concerns that octopus and chiton have been depleted by EVOS and that subsistence uses are impaired. In this proposal, close-out costs are requested for FY 97, the third year of the project. The first year (FY 95) was to establish the feasibility of working with octopus in Prince William Sound, identify suitable study sites, and evaluate techniques. The second year (FY 96) is focusing on the factors in nearshore habitats that are important to octopus, and on the turnover rates of octopus in those habitats.		<u>Chief Scientist's Recommendation</u> This is a good project to analyze and report data on a two-year study of octopus in PWS. It has addressed the concerns of local people about the abundance of octopus and chitons and has identified octopus habitat in Prince William Sound. Fund.		<u>Trustee Council Action</u> Fund. This project provides close-out funds for a two-year survey of octopus designed to address the concern that octopus stocks were depleted by the oil spill and that subsistence use of this resource is impaired. Funding is included for providing study results to communities who participated in the study.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97012-BAA	Comprehensive Killer Whale Investigation in Prince William Sound	C. Matkin/North Gulf Oceanic Society	NOAA	Cont'd 5th yr. 5 yr. project	\$157.5				\$157.5

Project Abstract

This project continues the monitoring of the damaged AB pod and other Prince William Sound killer whales that has occurred on a yearly basis since 1984. It provides further analysis of a GIS database on killer whales. When coupled with genetic and acoustic data, the analysis will evaluate recovery of killer whales, recognize changes in behavioral ecology, estimate killer whale predation on harbor seals, and estimate impacts of the harbor seal decline on the potential recovery of killer whales. Year round residency of killer whales will be assessed using a remote hydrophone system. Environmental contaminant levels in the blubber of specific whales will be determined and potential effects on recovery evaluated.

Chief Scientist's Recommendation

This proposal is excellent, combining well-established techniques and some innovative methods. The publication record of the principal investigator has improved. A successful review was held in November 1996 and I recommend that the work proposed for FY 97 be funded. Funding beyond FY 97 will be contingent on developing objectives and milestones for completion of this project.

Trustee Council Action

Fund. However, funding beyond FY 97 will be contingent on developing objectives and milestones for completion of the project. This project is providing valuable information about the long-term effects of the oil spill on resident and transient pods of killer whales in Prince William Sound and correlates the effects in part to their prey.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97025	Mechanisms of Impact and Potential Recovery of Nearshore Vertebrate Predators (NVP)	L. Holland-Bartels, et al/NBS-DOI	DOI	Cont'd 3rd yr. 5 yr. project	\$1,736.3	\$1,669.4	\$450.0	\$0.0	\$3,855.7

Project Abstract

The Nearshore Vertebrate Predator project (NVP) makes an integrated assessment of trophic, health, and demographic factors across a suite of apex predators injured by the spill to determine mechanisms constraining recovery and to improve knowledge of the status of recovery. Primary hypotheses are: 1) Recovery of nearshore resources injured by EVOS is limited by recruitment processes; 2) Initial and/or residual oil in benthic habitats and in or on benthic prey organisms has had a limiting effect on the recovery of benthic foraging predators; and 3) EVOS-induced changes in populations of benthic prey species have influenced the recovery of benthic foraging predators.

Chief Scientist's Recommendation

This project uses an ecosystem approach to examine recovery of injured species in the nearshore ecosystem. It was reviewed in depth at a workshop in February 1996. Recently, the results from the avian copredator work have become available, indicating that some continuing work on Barrow's goldeneyes and gulls is advisable but that other aspects of the work can be safely eliminated. In addition, funds to prepare pre-NVP sea otter publications should be contingent on acceptance by the Chief Scientist of reports from Project MM6. Budget increases over previous projections for on-going components (i.e., not including the avian copredator component) were substantial, but the project proposers have reduced these budgets. Fund.

Trustee Council Action

Fund, including an additional \$30,500 for the final year of limited avian copredator work which was deferred by the Trustee Council in August (final analyses in FY 98 will be conducted within the \$1,669,400 expected to be approved for FY 98). Funding for preparation of sea otter publications (\$10,000 approved in August) is contingent on acceptance by the Chief Scientist of the reports from Project MM6. The researchers conducting sea otter surveys under this project should explore ways of involving local sea otter hunters in their research/monitoring efforts. In general, the nearshore ecosystem, including intertidal habitat and organisms, was the area hardest hit by the oil spill. This project monitors recovery of intertidal organisms and closely linked vertebrate predators and addresses the question of whether continuing contamination is slowing recovery of vertebrate predators.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97026-CLO	Report Writing: Integration of Microbial and Chemical Sediment Data	J. Braddock/UAF	ADEC	Cont'd 1st yr. 1 yr. project	\$15.1	\$0.0	\$0.0	\$0.0	\$15.1
<u>Project Abstract</u> This project will provide funds to complete final data analysis and report writing begun under Project 95026/Hydrocarbon Monitoring: Integration of Microbial and Chemical Sediment Data. In FY 95, work began late on the project due to a delay in the processing of an RSA from the Department of Environmental Conservation to the University of Alaska Fairbanks. The \$15,100 requested here is an amount equal to the amount of FY 95 funds that lapsed before the project could be completed. The analysis of the combined microbial/chemical data sets will allow estimates of removal rates of hydrocarbons from contaminated sediments by biological processes.		<u>Chief Scientist's Recommendation</u> Funding for additional analyses are recommended for completion of this project with the stipulation that the results of this work be published in open, peer-reviewed scientific literature.		<u>Trustee Council Action</u> Fund. This project will conclude the analysis and report writing begun under Project 95026, and includes preparation of a manuscript for publication.					
97043B	Monitoring of Cutthroat Trout and Dolly Varden Habitat Improvement Structures	D. Gillikin/USFS		Cont'd 4th yr. 5 yr. project	\$24.0	\$8.0	\$0.0	\$0.0	\$32.0
<u>Project Abstract</u> This project provides for monitoring of habitat improvement structures and their effects on cutthroat trout and Dolly Varden populations. These structures were installed in 1995 under Project 95043B. There has been concern raised that habitat structures may inadvertently increase coho salmon populations, and thereby increase competition stress on Dolly Varden and cutthroat trout populations. This monitoring will seek to address those questions and concerns.		<u>Chief Scientist's Recommendation</u> FY97 funding for this project will complete this multi-year study and allow determination of the performance of habitat improvements made to restore injured fish species. Fund.		<u>Trustee Council Action</u> Fund final year of monitoring. This project monitors the effectiveness of cutthroat trout and Dolly Varden habitat improvement structures installed in FY 95. The structures were monitored in FY 96 and should be monitored one additional year. Project close-out (data analysis and report writing) will be funded in FY 98.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97052A	Community Involvement	P. Brown/Chugach Regional Resources Commission	ADFG	Cont'd 3rd yr. 8 yr. project	\$248.4	\$250.0	\$250.0	\$750.0	\$1,498.4

Project Abstract

This project will increase community involvement in the restoration process. The Spill Area-Wide Coordinator's work will continue through a contract with the Chugach Regional Resources Commission (CRRRC). Through direct communication with a network of local facilitators, the Spill Area-Wide Coordinator will continue to actively involve local residents in the restoration program, particularly ongoing scientific studies. (Local facilitators will be located in Tatitlek, Chenega Bay, Port Graham, Nanwalek, Cordova, Seward, Seldovia, Valdez, Kodiak, and Alaska Peninsula.)

Chief Scientist's Recommendation

This is a key program for fostering participation of local residents of the oil spill area in the EVOS restoration program. The program is successfully organized and functioning and needs to turn its attention to concrete achievements in FY 97. Fund.

Trustee Council Action

Fund, including addition of a community facilitator in Seldovia and additional travel for community facilitators to EVOS workshops. The proposal has been revised to eliminate funding of a computer network (a decision on this should be deferred until the communities and their regional organizations -- in particular, Chugach Regional Resources Commission, Chugach Heritage Foundation, Kodiak Area Native Association, and Kodiak Island Borough -- come forward with a collaborative plan to establish a network, train communities to use the network, and provide for maintenance and other operational costs of the network). In addition, the traditional knowledge component of the project is now included in Project 97052B/TEK. Project 97052A continues a program to facilitate communication and interaction among the Trustee Council, scientists, and residents of communities impacted by the oil spill.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97052B	Traditional Ecological Knowledge	P. Brown-Schwalenberg/CRR C	ADFG	New 1st yr.	\$94.5				\$94.5
	<u>Project Abstract</u> This project will hire a Traditional Ecological Knowledge (TEK) Specialist to (1) compile a reference guide to existing TEK data on resources injured by the oil spill, (2) provide technical assistance to restoration project PIs who plan to use, or for whom it would be appropriate to use, TEK, (3) serve as a contact point for spill area communities, the community facilitators and spill-area-wide coordinator hired under Project /052, and principal investigators on issues related to TEK, and (4) evaluate the feasibility of developing a comprehensive TEK database. The TEK Specialist will work under the guidance of an Advisory Group.		<u>Chief Scientist's Recommendation</u> It is desirable to combine the traditional ecological knowledge elements of the various natural resource projects into one project that can coordinate the way in which this information is gathered and treated. This project will accomplish that goal. The emphasis of the project should be on how traditional knowledge and that from scientific studies can inform each other. Fund.		<u>Trustee Council Action</u> Fund. This project would continue work begun under Project /052A to explore and facilitate the use of traditional knowledge in the restoration of injured resources.				
97064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in PWS	K. Frost/ADFG		Cont'd 3rd yr. 5 yr. project	\$317.8	\$150.0	\$50.0	\$0.0	\$517.8
	<u>Project Abstract</u> This project will monitor the status of harbor seals in Prince William Sound and investigate the possible causes for the ongoing decline. Aerial surveys will be conducted to determine whether the population continues to decline, stabilizes, or increases. Seals will be satellite-tagged to describe their movements, use of haulouts, and hauling out and diving behavior. Samples of blood, blubber, whiskers, and skin will be collected to study diet, health and condition, and genetic relationships to other harbor seal populations.		<u>Chief Scientist's Recommendation</u> This project continues to investigate the decline of harbor seals in the oil spill area. The research addresses the most potentially useful lines of investigation. The investigators are well qualified and the costs of the research appear reasonable. Fund.		<u>Trustee Council Action</u> Fund. This study explores reasons for the long-term decline in harbor seals: food limitations, disease, reproduction and killer whale predation. The results of this study will enable resource managers, subsistence users, and others to focus their efforts and concern on the most probable causes of harbor seal population decline. In FY 97, the focus of this project will shift to the survival and health of juvenile harbor seals.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97076	Effects of Oiled Incubation Substrate on Straying and Survival of Wild Pink Salmon	A. Wertheimer/NOAA	NOAA	Cont'd 3rd yr. 4 yr. project	\$618.8	\$234.6	\$0.0	\$0.0	\$853.4
<u>Project Abstract</u> This project examines the effects of oil exposure during embryonic development on the straying, marine survival, and gamete viability of pink salmon. The objectives are to conduct a related series of controlled experiments on straying of pink salmon to determine the role of oil and other factors so that field studies of straying in Prince William Sound after the oil spill can be interpreted; to determine if the return rate of pink salmon to adult is reduced when they have been exposed to oiled gravel during embryonic development; and to continue investigations into whether such exposure causes heritable damage to reproductive fitness of pink salmon.		<u>Chief Scientist's Recommendation</u> The greatest value of this project is that it supports an understanding of the effects of oil on nominal straying rates, reproduction, and early developmental stages of pink salmon. The weaknesses identified by the reviewers still exist, i.e., the difficulty of projecting results obtained in Southeast Alaska, and the lack of a genetic component. If straying rates are in fact lower than projected, an even more expensive field effort will be needed to complete this project.			<u>Trustee Council Action</u> Fund. Although the Chief Scientist has raised questions about this project, NOAA has been responsive to prior concerns and funding this project in FY 97 will get the most return out of what has been a significant investment of Trustee Council dollars. This project will help with the interpretation of previous results on straying in relation to oil and should aid evaluation of when pink salmon recovery objectives are achieved. In addition, this project will provide useful information on marine survival of pink salmon that will have broad application to salmon management.				
97090-CLO	Mussel Bed Restoration and Monitoring	M. Babcock/NOAA		Cont'd 6th yr. 6 yr. project	\$10.0	\$0.0	\$0.0	\$0.0	\$10.0
<u>Project Abstract</u> This proposal is for finalizing three additional manuscripts from the four-year, comprehensive final report due September 30, 1996.		<u>Chief Scientist's Recommendation</u> This is a solid proposal to publish the results of important work on oiled mussel beds. The investigator has a good record of producing results and publications. Recommend funding at \$10.0.			<u>Trustee Council Action</u> Fund contingent on receipt of report on 95090 (due 9-30-96). This project will complete reporting/publication requirements for the five years of studies funded by the Trustee Council on the persistence of oiling in mussel beds in Prince William Sound and the Gulf of Alaska and restoration of 12 of these beds.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97100	Administration, Science Management, and Public Information	All Trustee Council Agencies	ALL	Cont'd Annual	\$2,857.1	\$2,800.0	\$2,500.0	\$4,700.0	\$12,857.1
<u>Project Abstract</u> This project provides overall support for administration and implementation of the restoration program through the Restoration Office. It includes funding for the Trustee Council's core staff working at the direction of the Executive Director, management of the scientific peer review process, public involvement efforts including the 17-member Public Advisory Group (PAG), and support for Trustee agency participation in the restoration program process as part of the Restoration Work Force.		<u>Chief Scientist's Recommendation</u> Proposal not reviewed.		<u>Trustee Council Action</u> Fund. This project provides overall support for administration and implementation of the restoration program. The budget has been significantly reduced from the FY 96 authorization of \$3,439,600.					
97115	Implementation of the Sound Waste Management Plan: Environmental Operations and Used Oil Management System	P. Roetman/Prince William Sound Economic Development Council		New 3rd yr. 4 yr. project	\$1,167.9	\$75.0	\$0.0	\$0.0	\$1,242.9
<u>Project Abstract</u> This project will help prevent marine pollution that is generated from land-based sources within the five Prince William Sound communities. The Sound Waste Management Plan was developed to address community-based sources of marine pollution. This project will provide a portion of the funding needed to implement two of the five recommendations contained in the plan: 1) construction of Environmental Operation Stations to improve the overall management of solid and oily wastes; and 2) creation of a comprehensive used oil management system in each community. The communities will provide substantial funding to help implement the recommendations.		<u>Chief Scientist's Recommendation</u> This is a logical and effective proposal to implement the planning work on management of chronic wastes that affect the marine ecosystem and injured species. The communities involved have done an outstanding job, and they propose to contribute significant in-kind resources to this project. Fund.		<u>Trustee Council Action</u> Fund. This project will decrease pollution entering Prince William Sound by providing a sheltered space and equipment necessary to safely collect and store used oil, household hazardous wastes and recyclable solid wastes in Valdez, Cordova, Tatitlek, Chenega and Whittier. Environmental Operations Stations ("EVOS" stations) will be modular structures erected in convenient locations in each community to encourage residents and visitors to properly dispose of wastes. By reducing chronic pollution, this project will reduce stress on recovering resources and services. <i>NOTE: This is a capital project that was funded outside of the regular FY 97 work plan of research, monitoring, and general restoration projects.</i>					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97126	Habitat Protection and Acquisition Support	C. Fries/ADNR, D. Gibbons/USFS	ADNR	Cont'd 4th yr.	\$1,282.6	\$770.0	\$565.0	\$215.0	\$2,832.6
<u>Project Abstract</u> This project provides negotiation support to the Trustee Council in order to reach closure on habitat protection priorities. This support includes title reports, appraisals, on-site inspections, hazardous materials surveys, surveys, timber cruises and reviews, and other services necessary for the successful completion of habitat protection negotiations.		<u>Chief Scientist's Recommendation</u> This project is intended to provide baseline data that enables comparison of resource values on different lands under possible consideration for acquisition by the Trustee Council. This support is essential to the Trustee Council's small parcel acquisition program. The budget should receive additional review, and the on-going role of the Habitat Work Group, if any, needs clarification. Fund.		<u>Trustee Council Action</u> Fund. This project provides funds to support the habitat protection program, including negotiation staff, appraisals, closing costs, etc. <i>NOTE: Funds for this project are provided through the Trustee Council's habitat protection program, not through the regular FY 97 work plan of research, monitoring, and general restoration projects.</i>					
97127	Tatitlek Coho Salmon Release	G. Kompkoff/Tatitlek IRA Council		Cont'd 3rd yr. 5 yr. project	\$11.1	\$12.0	\$12.0	\$0.0	\$35.1
<u>Project Abstract</u> This project will create a coho salmon return to Boulder Bay near Tatitlek village. Enough coho eggs to produce 50,000 smolt will be collected from an ADFG approved stream, incubated and reared to smolt at the Solomon Gulch Hatchery, transported, and held for two weeks in net pens in Boulder Bay before release. Release will produce a 2,000 to 3,000 adult return to Boulder Bay for harvest in a subsistence fishery.		<u>Chief Scientist's Recommendation</u> This is a good replacement resource project. Fund.		<u>Trustee Council Action</u> Fund. Fund through FY 99 (one coho life cycle). Project will create a coho salmon run near Tatitlek as a replacement resource for subsistence resources injured by the oil spill.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97131	Chugach Native Region Clam Restoration	D. Daisy/Chugach Regional Resources Commission	ADFG	Cont'd 3rd yr. 5 yr. project	\$365.0	\$365.0			\$730.0
<u>Project Abstract</u> Cost effective procedures for establishing safe, easily accessible subsistence clam populations near Native villages in the oil spill region will be established. The Qutekcak hatchery in Seward will annually provide about 800,000 juvenile littleneck clams and cockles. Historical information, local and agency expertise, and research will be used to identify areas to seed and what method to use. Total seeded area during the project will not exceed five hectares. Follow-up research on success of seeding will be conducted. Development work will be confined to areas near the Native villages of Eyak, Tatitlek, Nanwalek, and Port Graham.		<u>Chief Scientist's Recommendation</u> FY 1997 is the third year of a 5-year project. The proposers have shown that they can spawn and grow little-neck clams in a nursery environment. There are substantial concerns about the grow-out phase of the project, but the proposers have been responsive to these concerns. Fund.			<u>Trustee Council Action</u> Fund. This project is intended to establish subsistence clam populations as replacement for subsistence resources injured by the oil spill.				
97139A1	Salmon Instream Habitat and Stock Restoration - Little Waterfall Barrier Bypass Improvement	S. Honnold/ADFG		Cont'd 3rd yr. 4 yr. project	\$26.4		\$0.0	\$0.0	\$26.4
<u>Project Abstract</u> This proposal will evaluate the barrier bypass improvement at Little Waterfall Creek, as indicated by pink and coho salmon use of the bypass. The renovation of the bypass (decreased grades and addition of resting pools) was completed in FY 96 and is expected to facilitate increased spawning habitat use by pink and coho salmon. Studies in FY 97 will include bypass inspections to document salmon passage, spawner enumeration, and juvenile salmon abundance monitoring.		<u>Chief Scientist's Recommendation</u> This project will evaluate the effects of improvements to Little Waterfall Creek bypass, and it seems appropriate to determine the performance of the improvements. However, there is concern about the lack of attention to interspecific competition and interactions with other species. FY 98 funding is contingent on addressing these questions; funding in FY 99 is not recommended. Fund as requested in FY 97.			<u>Trustee Council Action</u> Fund FY 97 only. Project is intended to increase available spawning habitat and thus provide additional pink and coho salmon for harvest as a replacement for salmon lost due to the oil spill. FY 97 work will be monitoring and evaluation of the barrier bypass modification, as required by the Trustee Council's supplementation criteria. Funding for further monitoring in FY 98 will be considered only if questions raised by the Chief Scientist concerning interspecific competition and interaction with other species are addressed.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97139A2	Port Dick Creek Tributary and Development	N. Dudiak/ADFG	ADFG	Cont'd 2nd yr. 5 yr. project	\$76.5	\$49.7	\$39.7	\$32.0	\$197.9
<u>Project Abstract</u>		<u>Chief Scientist's Recommendation</u>		<u>Trustee Council Action</u>					
The goal of this project is the restoration of the native Port Dick Creek salmon stocks. Actual restoration of the spawning habitat took place in June 1996. If natural colonization rates are not adequate to fully seed the restored habitat, on-site fish culture techniques will be incorporated using the native pink and chum salmon stocks to maintain genetic integrity. Water temperature, water level, salinity and stream velocity will be monitored. Additional post construction substrate monitoring will also be conducted.		This is a continuing project in which it is important to evaluate the effects of improvements on Port Dick Creek. The increased funding to monitor bedload transport and salmon survival is appropriate given past peer review comments. Fund, including additional monitoring.		Fund, including new objectives related to bedload transport monitoring and increased salmon fry evaluation. This project is intended to increase available spawning habitat and thus provide additional pink and chum salmon for harvest as a replacement for salmon lost in the oil spill.					
97139C1-CLO	Montague Riparian Rehabilitation Monitoring	D. Schmid/USFS		Cont'd 4th yr. 4 yr. project	\$9.3	\$0.0	\$0.0	\$0.0	\$9.3
<u>Project Abstract</u>		<u>Chief Scientist's Recommendation</u>		<u>Trustee Council Action</u>					
This is a close-out of Project 96139C1. Originally, FY 96 was to be the close-out year, but some instream structures failed. In FY 96, the structures which failed will be repaired using better anchoring techniques. Crowded stands of Sitka spruce, which were thinned to accelerate growth, will also be monitored. In FY 97, the repaired structures will be monitored to make sure they have withstood the high flows associated with the spring runoff, the final data on spruce growth will be collected, and the final report will be written.		Final year of this project. Fund.		Fund project close-out. This project is designed to evaluate the results of a previous Trustee Council effort to improve habitat for pink salmon and chum salmon on Montague Island. FY 96 was to be the final year of funding for the project (monitoring and report writing). However, some of the instream structures failed and the FY 96 funds were reprogrammed to repair the structures. FY 97 funding will allow the desired monitoring to occur.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97142-BAA	Status and Ecology of Kittlitz's Murrelets in Prince William Sound	R. Day/ABR, Inc.	NOAA	Cont'd 2nd yr. 3 yr. project	\$188.5		\$0.0	\$0.0	\$188.5
<u>Project Abstract</u> This proposal would fund a second year of investigations on the status and ecology of Kittlitz's murrelet, a rare seabird breeding in glaciated fjords of Prince William Sound. The study would continue to evaluate the abundance, distribution, habitat use, productivity, and trophic position of this little-known seabird in northwestern Prince William Sound. Given uncertainty about the effects of the oil spill on this species, a better understanding of its status and ecology is required to ensure its long-term conservation.		<u>Chief Scientist's Recommendation</u> This is a continuing project gathering basic information on a species recently added to the injured species list, which is also being considered for listing under the U.S. Endangered Species Act. The proposal has been supplemented to describe the nature of correction factors to be applied to survey data and the rationale for the statistical model (paired t-test) to be used. Fund, but additional recommendations for this project may be provided after review of FY 96 results.		<u>Trustee Council Action</u> Fund. The project may be further modified after review of FY 96 results. This study will gather basic information on the Kittlitz's murrelet, which is a rare, poorly known seabird. According to one estimate, a substantial fraction of the world population of this species was killed in the spill. The results of this study may lead to identification of restoration measures.					
97144	Common Murre Population Monitoring	D. Roseneau/DOI-FWS		Cont'd 2nd yr. 3 yr. project	\$73.8	\$50.0	\$0.0	\$0.0	\$123.8
<u>Project Abstract</u> This project continues a population monitoring study that will be conducted in 1996. Murres will be counted at Barren Islands nesting colonies during FY 96 and FY 97. An optional third year of census work at the Chiswell Islands murre colonies is also proposed to supply complementary data from another injured nesting location that will help evaluate the overall recovery status of common murres in the spill area.		<u>Chief Scientist's Recommendation</u> This project would continue monitoring murre colony attendance in the Barren Islands. This is a solid, continuing project, and the researchers are very strong. This work will help bring closure to the recovery status of common murres, which were hit hard by the spill. The proposers recommend visiting the Chiswell Islands in FY 98, and I endorse this recommendation. The reviewers also attach great importance to a population trends manuscript slated for preparation in FY 98. This project complements and aids the APEX project (/163). Fund.		<u>Trustee Council Action</u> Fund. This project will monitor common murre populations on the Barren Islands. Population censuses at the Barren Islands will be very helpful in terms of the APEX study (/163), as well as to track murre recovery at this critical group of colonies. Murre colonies on the Chiswell Islands should be monitored in FY 98.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97145	Cutthroat Trout and Dolly Varden: Relation Among and Within Populations of Anadromous and Resident Forms	G. Reeves/USFS, Pacific Northwest Research Station	USFS	Cont'd 2nd yr. 3 yr. project	\$229.7	\$100.0	\$0.0	\$0.0	\$329.7
<u>Project Abstract</u> This project will determine the relation between resident and anadromous forms of Dolly Varden and cutthroat trout within the same watershed and between watersheds in Prince William Sound. It will examine genetic, meristic, and life-history features of each group in FY 96 and FY 97. Results from this study will allow development of a long term, comprehensive and ecologically sound restoration strategy for these fish.		<u>Chief Scientist's Recommendation</u> This project is extremely critical for developing a restoration strategy for cutthroat trout and Dolly Varden. Several other very good proposals have been made for work on these species, but they cannot be implemented until their relationship to an overall recovery strategy is identified. Therefore, this project's contribution to the development of this strategy is important. It will be important to review results obtained after FY 96 field work and data analysis are complete. Fund.			<u>Trustee Council Action</u> Fund. This project defines relationships among stocks and life history forms (e.g., anadromous and resident), refines understanding of the nature and extent of oil spill injury and may confirm whether recovery has occurred. The results of this study will be used to develop a restoration strategy for cutthroat trout and Dolly Varden. This information has direct implications for management of sport fisheries in Prince William Sound and nationwide, and the USFS is providing significant support for this project.				
97149	Archaeological Site Stewardship	D. Reger/ADNR		Cont'd 2nd yr. 4 yr. project	\$66.3	\$66.3	\$13.9	\$0.0	\$146.5
<u>Project Abstract</u> The archaeological site stewardship program will provide training and coordination for a cadre of volunteers to monitor vandalized sites in the oil spill area beyond the ability of agency monitoring. Volunteer site stewards will protect damaged sites on the Kenai Peninsula, Kachemak Bay, Uganik Bay, Uyak Bay and the Chignik area of the Alaska Peninsula. Further protection will come from increased local awareness of harm from site vandalism.		<u>Chief Scientist's Recommendation</u> Vandalism of archaeological sites was a serious concern in the aftermath of the oil spill. Long-term protection and restoration of injured sites will be most successful if undertaken by local people. This successful project is testing and fostering this approach, and it should be continued. Fund.			<u>Trustee Council Action</u> Fund. This is a pilot project that provides training and coordination for volunteers to monitor vandalized archaeological sites in the oil spill area. This effort is currently beyond the ability of normal agency monitoring. After FY 98, expenses will be assumed either by volunteer stewards or agency budgets, except for a small amount of closeout funds in FY 99.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97159-CLO	Surveys to Monitor Marine Bird Abundance in Prince William Sound During Winter and Summer: Report and Publication Writing	B. Agler/DOI-FWS	DOI	Cont'd 4th yr.	\$60.1				\$60.1
<u>Project Abstract</u> In FY 97, this project will fund report and publication writing. Data collected during March 1990, 1991, 1993, 1994, and 1996 and July 1989, 1990, 1991, 1993, and 1996 will be used to examine trends by determining whether populations in the oiled zone changed at the same rate as those in the unoiled zone. Overall population trends for Prince William Sound from 1989-96 will also be examined. In addition, marine bird damage assessment information will be prepared for publication.		<u>Chief Scientist's Recommendation</u> This project is developing a valuable long-term dataset regarding recovery status of injured species, and the statistical power to detect trends in these highly variable datasets should be reached with FY 96 data. The out-year budgets seem excessive, and any future commitments must be considered annually. Fund at level of revised request, which includes \$15,000 for additional statistical analyses. The additional \$15,000 should be approved with the stipulation that results of this work be published in the open, peer-reviewed scientific literature.		<u>Trustee Council Action</u> Fund, including \$15,000 for the services of a statistician to assist in preparation of marine bird damage assessment information for publication in the peer-reviewed literature. Funding also includes preparation of a final report (including 1 month to conduct regression analysis) and two other manuscripts (# 4 and #6 in the proposal) on marine bird abundance. The abundance surveys provide basic information on the status and recovery of seabirds (and sea otters) in Prince William Sound and should now be adequate to detect trends in seabird populations. The need for future surveys should be determined after review of the final report.					
97161	Differentiation and Interchange of Harlequin Duck Populations Within the North Pacific	B. Goatcher/Katmai National Park		Cont'd 2nd yr. 3 yr. project	\$98.8	\$9.5	\$0.0	\$0.0	\$108.3
<u>Project Abstract</u> Restoration efforts for harlequin ducks require an assessment of spatial population structuring and movements among geographic regions to understand the extent of past and ongoing injury, to interpret measures of recovery, and to determine limitations to recovery and restoration strategies. This project will use genetic analyses and color-marking to determine the degree of spatial population structuring among harlequin ducks from broad geographic regions throughout their North Pacific molting and wintering ranges, including areas directly affected by the oil spill.		<u>Chief Scientist's Recommendation</u> This is a promising attempt to determine population differentiation in harlequin ducks in the northern Gulf of Alaska using two complementary techniques (genetics and banding). I am interested in successful completion of this two-year project. Fund, but there may be need for additional guidance based on a review of FY 96 results.		<u>Trustee Council Action</u> Fund. This project will improve understanding of the population differentiation and movement among geographically separate groups of harlequin ducks in the northern Gulf of Alaska. This information will contribute to restoration and management goals in Prince William Sound and elsewhere in the spill area.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97162	Investigations of Disease Factors Affecting Declines of Pacific Herring Populations in Prince William Sound	G. Marty/UC Davis; R. Kocan/Univ. Wash., C. Kennedy & A. Farrell, Simon Fraser Univ.	ADFG	Cont'd 3rd yr. 4 yr. project	\$517.7	\$437.6	\$0.0	\$0.0	\$955.3

Project Abstract

Field and controlled laboratory studies will focus on viral hemorrhagic septicemia virus and *Ichthyophonus hoferi*, a pathogenic fungus, to determine their role in the disease(s) and mortality observed in Prince William Sound herring since 1993. Herring will be monitored throughout the year for signs of disease and immune status, while specific pathogen-free herring will be used to determine the degree of mortality, blood chemical changes, and pathogenicity produced by these organisms alone and in combination with exposure to stressors such as petroleum hydrocarbons, temperature and crowding.

Chief Scientist's Recommendation

This is a technically excellent ongoing project that is contributing greatly to our understanding of the causes of the population crash of herring in 1993-94, and the recovery of the population from pathogenic effects. The investigators are well qualified, with laudable publication records. The project appears to be cost-effective. Fund.

Trustee Council Action

Fund. This project investigates the potential link between oil exposure and disease in herring, and between disease and the herring population decline in Prince William Sound. Understanding the causes of the decline and the lack of recovery is important for restoration of the herring population in Prince William Sound and resumption of the herring fishery.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97163	APEX: Alaska Predator Ecosystem Experiment in Prince William Sound and the Gulf of Alaska	D. Duffy, et al/UAA	NOAA	Cont'd 3rd yr. 6 yr. project	\$1,800.0	\$1,800.0	\$1,800.0	\$176.4	\$5,576.4

Project Abstract

This project will compare the reproductive and foraging biologies, including diet, of seabirds in Prince William Sound with similar measurements from Cook Inlet, an area with apparently a more suitable food environment. These measurements will be compared with hydroacoustic and net samples of fish to calibrate seabird performance with fish distribution and abundance, in an effort to determine the extent to which food limits the recovery of seabirds. Fish will be sampled to determine whether competitive and predatory interactions or different responses to the environment may be favoring the abundance of one fish species over another.

Chief Scientist's Recommendation

The APEX project is an important, innovative project examining the relationship between the availability of forage fish and productivity in marine birds. The study is fundamental to the restoration strategy adopted by the Trustee Council. The PIs are highly qualified and the project has strong leadership. The cost of this project has been reduced in response to earlier concerns, and the modeling component (from Project 97253) has been included as requested. There are still several issues which need to be addressed, but these can only be considered following a review of 1996 results. These issues include the retention of the forage fish diet overlap component (subproject C). In addition, recommendations on related, new projects -- 97231/Marbled Murrelets and 97305/Stable Isotopes -- may need to be revised in light of APEX priorities following the review this fall or winter.

Trustee Council Action

Fund; project incorporates the modeling effort proposed in 97253-BAA (\$69.8). Funding for the field sampling component of subproject C (forage fish diet overlap) is contingent on the results of the APEX review session, scheduled for winter 1997. Funding for subproject H (proximate composition of forage fish) is contingent on submittal of the report on Project 95121. The APEX project investigates the link between forage fish and seabird productivity. This work may yield results that will benefit the marine ecosystem in Prince William Sound and the northern Gulf of Alaska.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97165	Genetic Discrimination of Prince William Sound Herring Populations	J. Seeb/ADFG	ADFG	Cont'd 3rd yr. 4 yr. project	\$41.6	\$56.0	\$0.0	\$0.0	\$97.6

Project Abstract

The Prince William Sound herring fishery declined catastrophically in 1992. The Alaska Department of Fish and Game recovery effort includes incorporating knowledge of genetically-derived population structure into harvest management. This continuing project is delineating the structure of Prince William Sound population(s) and related North Pacific populations using both nuclear and mitochondrial DNA analyses. Tests for temporal and spatial diversity within years and temporal stability across years will be conducted.

Chief Scientist's Recommendation

This project has been underway for three years and has substantially met its objectives. In FY 97, the investigators should complete the lab work already underway and plan to produce a final report in FY 98. Fund.

Trustee Council Action

Fund. Project 97165 is intended to address basic questions about the genetic composition of Prince William Sound herring in relation to other North Pacific populations. When setting harvest limits, it is important to know whether there exists one or more genetically distinct populations.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97166	Herring Natal Habitats	M. Willette/ADFG	ADFG	Cont'd 4th yr. 6 yr. project	\$340.3			\$0.0	\$340.3

Project Abstract

The oil spill coincided with the spring migration of Pacific herring to spawning grounds in Prince William Sound. Studies of oil spill injuries to herring documented damage from oil exposure in adult herring, reduced hatching success of embryos, and elevated levels of physical and genetic abnormalities in newly hatched larvae. The Prince William Sound herring spawning population has drastically declined since 1993, and pathology studies have implicated viral hemorrhagic septicemia (VHS) and *ichthyophonus* as potential sources of mortality as well as indicators of stress. This project will monitor the abundance of the herring resource in Prince William Sound using SCUBA and hydroacoustic techniques.

Chief Scientist's Recommendation

This project has been carried out for several years since the oil spill to provide basic information about the spawning biomass of Pacific herring in Prince William Sound. The proposal for FY 97 would compare egg-based estimates of biomass with biomass estimates obtained from acoustic methods. The absence of any absolute abundance measure will make it necessary for the Alaska Department of Fish and Game to eventually choose among age-weight-length analyses from test fishing, aerial surveys of shoreline spawning, hydroacoustic measures, egg-deposition-based abundance and juvenile abundance survey methods developed in the SEA project (/320). The low cost and initial encouraging results from hydroacoustic surveys make this method a likely candidate for a future management tool. Also, 1997 is likely to be a period of continuing rebuilding of the stock. Therefore, the continuation of hydroacoustics is warranted in FY 97. However, it is likely that in FY 98 not all methods now supported by the Trustee Council will be continued.

Trustee Council Action

Fund, including the hydroacoustics component and completion of the herring recruitment model (which were deferred by the Trustee Council in August). In FY 98, fund only one survey method based on peer reviewers' concerns about the difficulty in comparing the herring spawn deposition technique with the hydroacoustic survey. The Alaska Department of Fish and Game has now provided a plan to take over full support of this work after FY 98. This project continues abundance surveys of Pacific herring and supports fisheries management decisions that protect the recovery of the stock.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97167-BAA	Preparation and Curation of Seabirds Salvaged from the Exxon Valdez Spill	S. Rohwer/University of Washington Burke Museum	NOAA	New 1st yr. 1 yr. project	\$32.1	\$0.0	\$0.0	\$0.0	\$32.1
<u>Project Abstract</u>		<u>Chief Scientist's Recommendation</u>		<u>Trustee Council Action</u>					
In 1992 the Burke Museum received emergency funds from the National Science Foundation to salvage about 1,500 of the most valuable bird carcasses from the oil spill. A year later the museum received another NSF grant to support the preparation, curation and storage of these specimens; unfortunately, that funding was not adequate to complete these tasks. This proposal seeks funds to complete the preparation and curation of the remaining birds salvaged from the spill for the Burke Museum.		The project will establish a biological legacy that could be very valuable to restoration studies that require a sampling of birds killed by EVOS. Potential applications of genetic and other techniques to these samples could uncover additional information about injured bird populations. If there are not enough funds to salvage all of the specimens, as many as possible should be salvaged, giving priority to a combination of carcasses that has the greatest value to the restoration program. Fund at approximately \$30.0.		Fund. This project will complete the preparation, cataloging and labeling of a sample of bird carcasses from the spill. This collection has value for restoration studies, including studies under consideration in this Work Plan (e.g., Project 97169) that require a sample of birds that died in the spill. EVOS researchers should be given first priority to work with these specimens. If the reduced budget is not sufficient to salvage all of the carcasses, as many as possible will be salvaged giving priority to those with the greatest value to the restoration program. If these carcasses are destroyed, there will be an irretrievable loss of materials to aid restoration studies.					
97169	A Genetic Study to Aid in Restoration of Murres, Guillemots, and Murrelets to the Gulf of Alaska	V. Friesen/Queen's University, J. Platt/DOI-FWS		New 1st yr. 4 yr. project	\$59.4	\$78.1	\$83.8	\$12.8	\$234.1
<u>Project Abstract</u>		<u>Chief Scientist's Recommendation</u>		<u>Trustee Council Action</u>					
Populations of common murres, pigeon guillemots, and marbled and Kittlitz's murrelets from the Gulf of Alaska are failing to recover from the oil spill. This project will use state-of-the-art genetic techniques to aid in their restoration by 1) determining the geographic limits and structure of populations, i.e., the extent to which colonies are genetically isolated or comprise metapopulations, 2) detecting cryptic species and subspecies, 3) identifying sources and sinks, 4) providing genetic markers for the identification of breeding populations of birds killed by the spill, 5) identifying appropriate reference or control sites for monitoring or reintroductions, and 6) determining the role of inbreeding and small effective population sizes in restricting recovery.		The Trustee Council is interested in application of genetic techniques to questions about seabird biology. This project has been revised in response to peer review comments with regard to narrowing the objectives, clarifying use of various genetic methods, and reducing travel costs. This project is now recommended for funding.		Fund. The FY 97 Invitation encouraged proposals on the genetics of common murres, marbled murrelets, and pigeon guillemots in order to better understand the relationship between different populations of these species. This proposal was responsive to the Invitation and the Pls have responded to concerns about the objectives and methodologies of the study.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97170	Isotope Ratio Studies of Marine Mammals in Prince William Sound	D. Schell/UAF Institute of Marine Science	ADFG	Cont'd 2nd yr. 3 yr. project	\$143.3	\$110.0	\$0.0	\$0.0	\$253.3
<u>Project Abstract</u> This project uses natural stable isotope ratios to assess trophic structure and food webs in Prince William Sound and contributes to the studies by ADFG personnel to determine the reasons for the decline of harbor seal populations. Through a mix of captive animal studies, comparison of isotope ratios in archived and current marine mammal tissues and their potential prey species in Prince William Sound, insight into environmental changes causing the decline may be possible. In addition, by providing analytical services for mass spectrometry the project contributes to the SEA (/320) program's effort to describe the food chains supporting commercial fishes impacted by the oil spill.			<u>Chief Scientist's Recommendation</u> This is an excellent proposal that holds good promise for an independent perspective on structure of the Prince William Sound food web supporting Pacific herring, pink salmon, harbor seals, and other injured species. This work is by its nature highly integrated with many other ecological projects being conducted in the oil spill area, including the harbor seal work in Project /244. The investigator has a good track record in the EVOS process and the work promises to be publishable in top-notch journals. Progress up to now is excellent. The cost of the work is very reasonable, given the costs for commercial analyses of stable isotopes. Fund.			<u>Trustee Council Action</u> Fund. This project provides technical support for 97064, which may help explain why harbor seal populations have declined. The project will also assist the SEA program (/320) by describing the food chains that support important commercial fisheries in Prince William Sound.			
97180	Kenai Habitat Restoration & Recreation Enhancement	M. Rutherford/ADNR, M. Kuwada/ADFG		Cont'd 2nd yr. 3 yr. project	\$599.4	\$759.6	\$0.0	\$0.0	\$1,359.0
<u>Project Abstract</u> Adverse impacts to the banks of the Kenai River total approximately 19 miles of the river's 166 mile shoreline. Included in this total are 5.4 river miles of degraded shoreline on public land. Riparian habitats have been impacted by trampling, vegetation loss and structural development. This riparian zone provides important habitat for pink salmon, sockeye salmon and Dolly Varden, species injured by the oil spill. The project's objectives are to restore injured fish habitat, protect fish and wildlife habitat, enhance and direct recreation, and preserve the values and biophysical functions that the riparian habitat contributes to the watershed.			<u>Chief Scientist's Recommendation</u> This is a concrete, on-going proposal for habitat restoration on degraded portions of the Kenai River, which are important for recreational services in the oil-spill area. The personnel appear to be well-qualified to do the work, though professional personnel costs seem high relative to the number of sites to be addressed in this project. Fund.			<u>Trustee Council Action</u> Fund. This project will aid restoration of habitat along the Kenai River for the benefit of sockeye salmon and other fish species of commercial and recreational importance.			

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97186	Coded Wire Tag Recoveries From Pink Salmon in Prince William Sound	T. Joyce/ADFG	ADFG	Cont'd 9th yr. 11 yr. project	\$273.8	\$279.4	\$90.0	\$0.0	\$643.2
<u>Project Abstract</u>			<u>Chief Scientist's Recommendation</u>			<u>Trustee Council Action</u>			
There is a growing body of evidence indicating that the oil spill has been at least partially responsible for weak pink salmon returns to Prince William Sound. Pink salmon runs are dominated by hatchery populations, and efforts to restore injured wild populations through selective harvesting of hatchery fish depend upon the availability of data pertaining to the spatial and temporal abundance of wild fish in the different fishing areas of the Sound. This project will provide accurate real-time and post-season estimates of hatchery and wild contributions to commercial harvests by date and fishing district, and also to hatchery cost-recovery harvests. This information is important for fisheries managers who must anticipate the effects of fishing strategies on injured populations.			Highly valuable on-going project. Technically excellent. Fund.			Fund. Trustee Council funding will be provided again in FY 98 to ensure two years of overlap with the Otolith Thermal Mass Marking Project (/188). Only close-out funds will be provided in FY 99. The project provides information that allows fisheries managers to vary the timing and location of commercial harvest to protect injured wild stocks.			

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97188	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon In Prince William Sound	T. Joyce/ADFG	ADFG	Cont'd 3rd yr. 5 yr. project	\$120.1	\$108.4	\$55.0	\$0.0	\$283.5
<u>Project Abstract</u> This project will develop otolith marking as a stock separation tool. All hatchery-produced salmon will be marked using this technique. Recoveries of these marks from returning adults caught in mixed-stock fisheries in Prince William Sound will allow improved estimation of the hatchery/wild composition of the catch. Improved estimation will enhance the fishery manager's ability to protect damaged wild pink salmon stocks in mixed-stock fisheries. The project will be conducted over two pink salmon life cycles. Experience with two life cycles is needed to fully develop a program that integrates induced banding code quality, otolith processing rates and costs, and statistical designs for catch sampling.		<u>Chief Scientist's Recommendation</u> This is an excellent ongoing project. The increased funds requested for purchase of equipment appear necessary to process otoliths in a timely manner. Fund at \$120.1.		<u>Trustee Council Action</u> Fund. Trustee Council funding will be provided again in FY 98 to ensure two years of overlap with the Coded Wire Tag Project (/186). Only close-out funds will be provided in FY 99. The project provides information that allows fisheries managers to vary the timing and location of commercial harvest to protect injured wild stocks. Otolith marking is a more accurate and less expensive technology for providing the information now obtained through coded wire tags.					
97190	Construction of a Linkage Map for the Pink Salmon Genome	F. Allendorf/Univ. Montana		Cont'd 2nd yr. 5 yr. project	\$254.5				\$254.5
<u>Project Abstract</u> This project will construct a detailed genetic linkage map for pink salmon by analyzing the genetic transmission of several hundred DNA polymorphisms. The ability to genetically map the location of oil-induced lesions will allow the thorough identification, description, and understanding of oil-induced genetic damage. This research will also aid other recovery efforts with pink salmon, including estimation of straying rates, description of stock structure, and testing whether marine survival has a genetic basis.		<u>Chief Scientist's Recommendation</u> The project proposes sound technical approaches. However, there is inadequate description of the experimental design for application of the developed genetic markers to management questions. Long-term applications of the developed genetic markers could be very valuable, although a specific link to restoration objectives is not well established in proposal. The investigators are qualified and talented, but new to this line of work, and it will take time for them to get the new techniques implemented. No commitments should be made at present to funding beyond FY 97. Concrete evidence of cost sharing by non-EVOS sources is essential for future commitment of EVOS funds. Fund in FY 97 and then review again.		<u>Trustee Council Action</u> Fund. This project will provide fundamental information which will likely aid restoration of wild stocks of pink salmon and benefit pink salmon management in the future. It is a long-term project with national importance. Trustee Council commitment at this time is to provide funding through FY 97 only.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97191A	Field Examination of Oil-Related Embryo Mortalities that Persist in Pink Salmon Populations in PWS	M. Willette/ADFG J. Seeb/ADFG	ADFG	Cont'd 9th yr. 11 yr. project	\$208.5	\$164.2	\$58.7	\$0.0	\$431.4
<u>Project Abstract</u> Elevated embryo mortalities were detected in populations of pink salmon inhabiting oiled streams following the oil spill. These increased rates of mortality persisted annually through the 1993 field season, suggesting that genetic damage may have occurred as a result of exposure to oil during early developmental life-stages. The consequences of this putative genetic damage include physiological dysfunction of individuals and reduced reproductive capacity of populations. The 1994 field results show no statistical difference in embryo mortality between oil-contaminated and reference streams. This project will continue to monitor the recovery of pink salmon embryos in the field and would verify and identify the occurrence of genetic damages.		<u>Chief Scientist's Recommendation</u> The recovery of pink salmon streams is planned to be followed through two even-year and two odd-year life cycles, and this objective will be completed in FY 98. No new genetics work should be initiated in FY 97, except that which is needed to support Project 97190. Fund.			<u>Trustee Council Action</u> Fund stream sampling and embryo mortality component. This project represents the major monitoring project for the ongoing injury to and recovery of pink salmon.				
97194	Pink Salmon Spawning Habitat Recovery	M. Murphy/NOAA		New 1st yr. 2 yr. project	\$138.3		\$0.0	\$0.0	\$138.3
<u>Project Abstract</u> This project will examine the level of oil contamination in pink salmon streams in 1989-90 and 1995 by analyzing sediment samples collected in 1989-90 by ADFG and similar samples collected in 1995 by the Auke Bay Laboratory/NOAA. Analysis and comparison of the 1989-90 and 1995 data will complete the understanding of the injury to pink salmon by documenting the initial exposure level and subsequent habitat recovery.		<u>Chief Scientist's Recommendation</u> This is a good proposal and it may provide the final results that clarify the impact of the spill on early life stages of pink salmon. The proposal could have been stronger if there was a greater overlap between sediment samples and streams that were studied for embryo morality. However, comparison of the data from this project with similar data from laboratory experiments will allow greater understanding of whether field conditions in pink salmon streams in 1989 and 1990 were toxic to early life history stages of pink salmon. Fund.			<u>Trustee Council Action</u> Fund. This project will tie actual concentrations of oil obtained from field samples in 1989, 1990, and 1995 in pink salmon streams to embryo mortalities and will illuminate the role of direct exposure in potentially causing the observed multi-year effects in pink salmon embryos. The level of funding recommended includes funds for preparation of the final report in FY 97.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97195	Pristane Monitoring in Mussels	J. Short/NOAA	NOAA	Cont'd 2nd yr. 5 yr. project	\$115.3	\$115.0	\$115.0	\$75.0	\$420.3
<u>Project Abstract</u> This project will continue to monitor pristane in mussels as an indirect index of potential year-class strength for pink salmon and herring and to identify critical pink salmon and herring marine habitat in Prince William Sound.		<u>Chief Scientist's Recommendation</u> This is an excellent proposal that holds good promise for development of a measurement for the annual importance of copepod production in the Prince William Sound food web, and therefore in interannual variability of larval fish (Pacific herring and pink salmon) production. The investigator has a good track record in the EVOS process and the work promises to be publishable in a first line journal. Progress to date has been excellent. The cost of the work is very reasonable. Fund, but commit to five rather than six years of Trustee Council support, pending subsequent evaluations of progress.			<u>Trustee Council Action</u> Fund. Collecting and measuring pristane in mussels may provide a simple measure of marine productivity, thus allowing predictions about future fisheries production and harvest levels. Project has good community involvement component, working with the participants in the Youth Area Watch (Project /210) and producing an informational brochure.				
97196	Genetic Structure of Prince William Sound Pink Salmon	J. Seeb/ADFG		Cont'd 4th yr. 6 yr. project	\$195.5	\$130.0	\$50.0	\$0.0	\$375.5
<u>Project Abstract</u> Wild-stock pink salmon suffered direct lethal and sublethal injuries as a result of the oil spill. An understanding of the population structure of pink salmon in Prince William Sound is essential to assess the impact of these injuries on a population basis and to devise and implement management strategies for restoration. This project is designed to delineate the genetic structure of populations of wild pink salmon inhabiting the Sound.		<u>Chief Scientist's Recommendation</u> This is a good continuing project that potentially will contribute much to the restoration of pink salmon stocks in Prince William Sound. However, there is a need to define what level of genetic variability is important for management of the stocks. There is need for more information on the methods for analysis for the mitochondrial DNA work and to identify which of the 70 polymorphic loci are most useful or promising to pursue. The investigators are technically well qualified but application of the information would benefit from closer integration with agency managers. Fund.			<u>Trustee Council Action</u> Fund. This project is designed to determine geographic extent of genetic differences in Prince William Sound pink salmon. Knowledge of the location of pink salmon stocks and genetic differences among the stocks in Prince William Sound could help refine pink salmon management areas and goals, aiding in the recovery of wild stocks.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97197	Alaska SeaLife Center Fish Pass	J. Seeb/ADFG	ADFG	New 1st yr. 1 yr. project	\$545.6	\$0.0	\$0.0	\$0.0	\$545.6
<u>Project Abstract</u> This project will design, construct, and install a fish pass at the Alaska SeaLife Center in Seward. The fish pass will be used to propagate experimental runs of Pacific salmon for new and ongoing genetic studies to be conducted at the Center. A cooperative agreement, similar to the agreement for the SeaLife Center, will be written by ADFG with the City of Seward to implement this project.			<u>Chief Scientist's Recommendation</u> This is a technically excellent idea that will benefit basic research on genetics of salmon and provide an experimental run that is not available in this portion of the state. It also has significant positive benefits for public education. The Trustee Council should fund through non-work plan sources after engineering review.			<u>Trustee Council Action</u> Fund. A fish pass at the SeaLife Center will enhance EVOS research and improve the restoration of injured resources and services. It will allow the effects of variables experienced during early life history to be studied throughout the life cycle of salmonids. Research on the long-term effects of oil, hatchery-wildstock interactions, ecology, disease, genetics, and conservation biology of salmonids requires experimental runs of fish. Without a fish pass, such studies cannot be done efficiently and effectively at the SeaLife Center. The Trustee Council contribution to this project is for the research components of the structure only. Visitor enhancements to the structure should be paid for with other funds. <i>NOTE: This is a capital project that was funded outside of the regular FY 97 work plan of research, monitoring, and general restoration.</i>			
97210	Youth Area Watch	R. Sampson/Chugach School District		Cont'd 2nd yr. 3 yr. project	\$150.0	\$150.0			\$300.0
<u>Project Abstract</u> This project links students within the oil spill impacted area with research and monitoring projects funded through the Trustee Council. The goal is to involve students in the restoration process and give them the skills to participate in restoration activities now and in the future. Youth conduct activities identified by principal investigators who have indicated interest in working with students.			<u>Chief Scientist's Recommendation</u> The Youth Area Watch is an outstanding project for fostering community participation in the EVOS restoration program. The proposal is well thought out and sufficient detail is present to see that this will likely be a successful project. Fund.			<u>Trustee Council Action</u> Fund, including expansion of program to Whittier, Seward, Valdez, and Cordova. This project is designed to involve local youth in ongoing restoration projects.			

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97214-CLO	Documentary on Subsistence Harbor Seal Hunting in PWS	B. Simeone/ADFG	ADFG	Cont'd 2nd yr. 2 yr. project	\$12.1	\$0.0	\$0.0	\$0.0	\$12.1
<u>Project Abstract</u> This is the close-out of a project begun in FY 96. The video will document all facets of harbor seal hunting, including the ecological and biological knowledge hunters use to hunt seals. In FY 96, Taylor Productions of Anchorage was awarded the contract to produce the documentary, which will be completed by February 1997. Funds requested for FY 97 will supplement a subcontract with Tatitlek to support village participation in the project and one month of ADFG staff time to assist with review of the project and final report completion. Funds will also support participation by Tatitlek residents in a public screening in Anchorage of the completed documentary.			<u>Chief Scientist's Recommendation</u> These funds are for close-out of a project to document subsistence use of harbor seals. This promises to be a very successful video that will have great educational value. It will be popular among the rural residents of Alaska, and will contribute to the restoration of subsistence services. With these funds, the principal investigators should make sure that the video receives extensive distribution.			<u>Trustee Council Action</u> Fund. This project is designed to contribute to the restoration of harbor seals and subsistence uses by transmitting local knowledge and observations about harbor seals to the scientific community.			
97220	Eastern PWS Wildstock Salmon Habitat Restoration	D. Schmid/USFS		Cont'd 2nd yr. 3 yr. project	\$115.0	\$12.0	\$0.0	\$0.0	\$127.0
<u>Project Abstract</u> This project will replace lost subsistence services resulting from the oil spill by increasing wild salmon production in eastern Prince William Sound. Instream fisheries habitat improvement techniques, primarily the installation of log structures, will be employed by local subsistence users to increase the capability of selected streams to produce additional salmon. The project is being developed and implemented cooperatively by the Native Village of Eyak and the USFS.			<u>Chief Scientist's Recommendation</u> This is a continuation of an ongoing project to provide replacement subsistence fish resources. Fund.			<u>Trustee Council Action</u> Fund continuation of work on Eyak-area streams. A separate proposal to enhance streams near Tatitlek may be considered in FY 98. This project is designed to replace subsistence services lost due to the oil spill by increasing wild salmon production in Prince William Sound.			

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97223-BAA	Analysis, Integration and Publication of Pre- and Post-Spill Data on Sea Otter Reproduction, Survival, Development, and Health	L. Rotterman and C. Monnett/Enhydra Research	NOAA	New 1st yr. 1 yr. project	\$43.0	\$0.0	\$0.0	\$0.0	\$43.0
<u>Project Abstract</u> This project will result in new analyses, integration, and comparison of pre- and post-spill data, and the publication of four papers needed to understand spill damage to sea otters and assess the current status of affected sea otter populations. These four papers will result in a) data on the reproduction, development, and survival of sea otter females, pups, and weanlings; b) generation of benchmarks against which to gauge sea otter population status relative to recovery; and c) information key to evaluating response strategies.		<u>Chief Scientist's Recommendation</u> Demographic information already existing in final reports delivered by the PIs represents a potentially valuable contribution to the literature on population biology of sea otters in Alaska. Therefore, it is recommended that a modest amount of funds be provided to convert these reports into peer-reviewed publications. Funding levels should be at 1.5 months/publication for manuscripts #1, #2, #4, and #5, with progress payments made upon completion of each manuscript.			<u>Trustee Council Action</u> Fund data analysis and preparation of four manuscripts (Health, development, and survival of sea otter pups and weanlings; Length-mass relationships in sea otters; Survival and reproduction of female sea otters; and Age-specific reproduction of female sea otters) for publication in the peer-reviewed literature. Analysis of these data will directly aid interpretation of current studies (NVP-Project /025).				
97225	Port Graham Pink Salmon Subsistence Project	E. Anahonak, Port Graham IRA Council		Cont'd 2nd yr. 5 yr. project	\$74.4	\$75.0	\$75.0	\$75.0	\$299.4
<u>Project Abstract</u> This project will provide pink salmon for subsistence use in the Port Graham area while maintaining the Port Graham hatchery's broodstock development schedule. Because local runs of coho and sockeye salmon, the more traditional salmon subsistence resource, are at low levels, pink salmon are being heavily relied on for subsistence. The project will supplement ADFG monitoring of the Port Graham hatchery's pink salmon return, and will enhance the juvenile-to-adult survival of hatchery-produced pink salmon through an extended rearing program.		<u>Chief Scientist's Recommendation</u> This proposal will generate replacement pink salmon subsistence resources. This version is much improved over the previous proposal (FY 96), as close attention to the reviewer's comments has produced a well thought out proposal with very good probability of success. Fund.			<u>Trustee Council Action</u> Fund. Project is intended to increase the availability of pink salmon for subsistence use, replacing runs of coho and sockeye salmon depleted since the oil spill.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97230	Valdez Duck Flats Restoration Project	J. Winchester/PWS Economic Development Council	ADNR	New 1st yr. 1 yr. project	\$67.8	\$0.0	\$0.0	\$0.0	\$67.8

Project Abstract

The Alaska Department of Natural Resources has identified the waters of Valdez Duck Flats and nearshore waters east to the mouth of the Lowe River as crucial estuarine habitat in the Prince William Sound Area Plan. Wildlife species injured by the oil spill are threatened by crowding, disturbance, plastics pollution, and active human disturbance. The area provides important habitat for water birds, anadromous fish, and other estuarine and intertidal species. This proposal will further identify injured resources, aid in the recovery of spill impacted populations, mitigate effects of visitor traffic, design a local volunteer monitoring program, and educate the public about the value of tidelands.

Chief Scientist's Recommendation

The apparent goal is to prevent loss of habitat values on the Valdez Duck Flats, an area which has some link to injured resources, including pink and sockeye salmon. Several tracts on the Duck Flats are under consideration for possible small-parcel acquisitions by the Trustee Council. The proposal has a heavy up-front emphasis on engineering and construction, but the proposers will first assess wildlife habitat needs and alternative ways of addressing those needs in the face of increasing development and visitor pressures. To their credit, the proposers seem to have the interest and cooperation of a number of key agencies and constituencies.

Trustee Council Action

Fund development of a concept plan for protection of habitat on the Valdez Duck Flats. The plan should take into account the effort underway by the Army Corps of Engineers to enhance tidal flushing in the area through development of a reservoir. One option for protecting the flats is affected by the acquisition of three small parcels, for which the appraisals are being reviewed. The Valdez Duck Flats are a large and complex intertidal mudflat and salt marsh that offer valuable habitat to several injured resources and services. A locally developed plan for protecting habitat on the Duck Flats will increase the probability that future use of the flats will promote the recovery of injured resources and services given increased public usage.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97231	Marbled Murrelet Productivity Relative to Forage Fish Availability and Environmental Parameters	K. Kuletz/FWS	DOI	New 1st yr. 4 yr. project	\$120.0				\$120.0
<u>Project Abstract</u> This project investigates the hypothesis that forage fish abundance is limiting marbled murrelet reproductive success and thus recovery. It compares forage fish abundance, as determined by APEX (/163) and SEA (/320) studies, to an index of murrelet productivity. Intra- and inter-annual comparisons will be made among six sites in Prince William Sound and between the Sound and Kachemak Bay. Data on terrestrial and marine habitat use will be integrated to make a descriptive model of adult and juvenile murrelet distribution. Historical data will be examined for changes in the present distribution of murrelets indicative of ecosystem-level changes.		<u>Chief Scientist's Recommendation</u> This project investigates the hypothesis that forage fish abundance is limiting marbled murrelet reproductive success and recovery. This work would complement the APEX project (/163) and is important in its own right, given the EVOS injury to murrelets. This is a good project from a solid investigator, but I am uncertain whether there is need for a four-year project. The PI has reduced the cost of the project. Defer decision on funding pending review of APEX and priorities.		<u>Trustee Council Action</u> Fund interim amount (\$31.3). Fund new field work in FY 97 (\$88.7) contingent on the results of the APEX (/163) review session scheduled for winter 1997. This project would investigate the link between forage fish and marbled murrelet productivity and thereby help explain why the population is not recovering. The proposal is responsive to the Invitation, which encouraged proposals that would integrate marbled murrelet field work with the APEX project.					
97244	Community-Based Harbor Seal Management and Biological Sampling	M. Reidel/Alaska Native Harbor Seal Commission		Cont'd 2nd yr. 3 yr. project	\$114.9	\$85.0	\$0.0	\$0.0	\$199.9
<u>Project Abstract</u> This project will expand the biological sample collection program funded by the Trustee Council in FY 96 in Prince William Sound and lower Cook Inlet to two Kodiak Island communities and Valdez. Village-based technicians will be selected by the Alaska Native Harbor Seal Commission (ANHSC) and trained to collect samples and transport the samples for analysis. The traditional knowledge database distributed in FY 96 will be updated and produced on CD-ROM. Maps depicting harbor seal subsistence harvest areas will be prepared. The ANHSC will organize a workshop and produce and distribute a newsletter. (Village-based technicians will be located in Cordova, Chenega Bay, Tatitlek, Seldovia, Port Graham, Nanwalek, Valdez, and two communities on Kodiak Island.)		<u>Chief Scientist's Recommendation</u> The technical approach for this project is very clear; it seems feasible, and makes excellent use of local residents' talents that have been historically underutilized. Good collaboration with Youth Area Watch project (/210). Proposers need to follow through on plan to find non-Trustee Council funding. Fund.		<u>Trustee Council Action</u> Fund. This pilot project will serve as a prototype for a long-term sampling program that will involve Native hunters in the management of harbor seals. In the near term, this project will enable Native hunters to provide harbor seal samples for projects 97001, 97064, and 97170, which seek to explain why harbor seals are not recovering. In FY 97, the biosampling program will be expanded to include Valdez and two sites in Kodiak.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97247	Kametolook River Coho Salmon Subsistence Project	J. McCullough & L. Scarborough/ADFG	ADFG	New 1st yr. 6 yr. project	\$31.4	\$13.8	\$14.1	\$44.1	\$103.4
<u>Project Abstract</u>		<u>Chief Scientist's Recommendation</u>		<u>Trustee Council Action</u>					
This project is a continuation of a project funded in 1996 through the EVOS criminal settlement. In FY 96 and FY 97, an assessment of methods to restore the Kametolook River's coho run to historic levels will be conducted. Instream incubation boxes (designed to increase the egg-to-fry survival rate) and habitat manipulation (such as clearing blocked river channels) to improve access to spawning and rearing habitat will be evaluated. Actual installation of instream incubation boxes is scheduled for summer 1997.		This appears to be a reasonable replacement for subsistence that apparently declined after the spill. The revised proposal and subsequent correspondence with the state geneticist indicate that the proposal conforms to the state genetics guidelines and with EVOS supplementation criteria.		Fund. This project is designed to enhance a small coho salmon run near the Alaska Peninsula village of Perryville as a replacement for subsistence resources injured by the oil spill. The project has a strong community involvement component, including the hiring of Perryville residents as local assistants on the project. In the winter/spring of 1997 the evaluation of instream incubation boxes will be completed and an Environmental Assessment prepared, with installation of large capacity incubation boxes scheduled for summer 1997. Trustee Council funding is anticipated for six years (through 2002), at which time the run is expected to be self-sustaining.					
97250	Project Management	All Trustee Council Agencies		Cont'd Annual	\$641.6	\$560.0	\$480.0	\$960.0	\$2,641.6
<u>Project Abstract</u>		<u>Chief Scientist's Recommendation</u>		<u>Trustee Council Action</u>					
Project management represents those costs incurred by the state and federal trustee agencies in fulfilling their responsibility to ensure that individual projects are managed consistent with the Memorandum of Agreement and Consent Decree, the Restoration Plan, and Trustee Council authorization. Prior to FY 97, the costs associated with project management were included in each individual project's budget.		Proposal not reviewed.		Fund. Project management provides essential accountability and oversight of projects funded through the work plan. The FY 97 funding will be allocated as follows: Alaska Department of Fish and Game - \$304.9 Alaska Department of Natural Resources - \$41.9 National Oceanic and Atmospheric Administration - \$153.4 U.S. Department of the Interior - \$89.9 U.S. Forest Service - \$51.5 The recommendations for future years' funding reflect a reduction in project management effort consistent with the decline in the annual funding targets for the overall work plan.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97251-CLO	Akalura Lake Sockeye Salmon Restoration	C. Swanton/ADFG	ADFG	Cont'd 1st yr. 1 yr. project	\$43.7	\$0.0	\$0.0	\$0.0	\$43.7
<u>Project Abstract</u> This project will substantiate that the Akalura Lake sockeye salmon stock is naturally recovering from damage caused by the oil spill through continued increased production of sockeye salmon smolts. This will be accomplished if the size of the 1997 smolt emigration is at or above approximately 200,000 fish. Funding will be for a single year of field studies identical to what was conducted during 1996 and a report coupling previous findings (Project /258A-Sockeye Overescapement) with those of the 1997 field studies.		<u>Chief Scientist's Recommendation</u> This project is appropriate for sustained salmon management. However, it is not clear that the current low escapements to Akalura Lake are related to the spill. Zooplankton levels and smolt production in the lake are at good levels as is marine survival of sockeye from Kodiak Island. Fund.		<u>Trustee Council Action</u> Fund for one year only, including field work and preparation of a final report. This project will conclude the smolt emigration studies on Akalura Lake (conducted under Project /258A), which will assist in determining the recovery status of the Akalura sockeye stock.					
97255-CLO	Kenai River Sockeye Salmon Restoration	L. Seeb, J. Seeb, K. Tarbox/ADFG		Cont'd 6th yr. 6 yr. project	\$158.3	\$0.0	\$0.0	\$0.0	\$158.3
<u>Project Abstract</u> This is the close-out of a five-year project to restore Kenai River sockeye salmon through improved stock assessment capabilities and more accurate regulation of spawning levels. Results from this study are currently being used in the management and restoration of Kenai River sockeye salmon injured in the oil spill.		<u>Chief Scientist's Recommendation</u> This is a technically sound proposal. However, the stock assessment and stock identification products are those which salmon harvest management programs routinely require. The Trustee Council has supported the development of the tools being applied by this project over several years on the theory that their application would be essential to harvest management of depressed and damaged salmon stocks. At this time, the risk of catastrophically low salmon runs which warrant further restoration efforts would appear extremely remote. Do not fund.		<u>Trustee Council Action</u> Fund project close-out (completion of data analysis and preparation of final report/manuscript). This concludes a 5-year effort to more accurately regulate spawning levels using improved sockeye salmon stock assessment capabilities. Continuation of effort should be taken over by the Alaska Department of Fish and Game as part of its normal management responsibility. The information provided by this project is being used by fisheries managers to modify fishing areas and openings in order to improve management of Kenai River and other Upper Cook Inlet sockeye salmon stocks, which were injured when escapement goals were greatly exceeded following the oil spill.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97256B	Sockeye Salmon Stocking at Solf Lake	D. Gillikin/USFS	USFS	Cont'd 2nd yr. 7 yr. project	\$50.0	\$143.5	\$78.5	\$185.1	\$457.1

Project Abstract

This project is designed to benefit subsistence users of Prince William Sound and especially residents of Chenega Bay. Habitat improvements were made in 1978, 1980 and 1981 to provide access to Solf Lake for anadromous fish. Investigations suggest that the lake is fishless and has adequate zooplankton biomass to support a salmon population. There are two phases to this project. The feasibility phase (FY 96) will verify the ability of Solf Lake to support a population of sockeye salmon. Phase 2 will stock the lake with sockeye salmon and ensure adequate anadromous access to the lake. If the project is found to be feasible, stocking of the lake could begin in 1998.

Chief Scientist's Recommendation

This appears to be a reasonable supplementation project in view of the pre-earthquake sockeye salmon population in Solf Lake. The FY 97 project will complete Phase I objectives and it appears technically feasible to then proceed to implement Phase II objectives, which will reestablish a sockeye population in Solf Lake for the benefit of subsistence communities in Prince William Sound. Fund.

Trustee Council Action

Fund. This project is intended to provide sockeye salmon as a replacement for subsistence and sport fishing resources injured by the oil spill, particularly for the residents of Chenega Bay.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97258A-CLO	Sockeye Salmon Overescapement Project	D. Schmidt/ADFG	ADFG	Cont'd 4th yr. 4 yr. project	\$214.0	\$0.0	\$0.0	\$0.0	\$214.0

Project Abstract

This proposal will close out the sockeye salmon overescapement work. Tasks include final report preparation, including analysis of samples collected in FY 96 for the Kenai River only. The Kenai studies will focus on evaluation of the existing data. Funding will be directed at completing the FY 96 sample analysis and evaluation of the existing database. The 1996 Kodiak samples will not be processed. These studies are developing production models for restoration of the system being evaluated.

Chief Scientist's Recommendation

This project has produced much scientific evidence relevant to the evaluation of the effects of overescapement. Our ability to gain additional understanding is limited by the uncertainty of estimates achieved with state-of-the-art data acquisition technologies. Development of a production model for the Kenai River sockeye salmon that accounts for trophic interactions is not relevant to restoration objectives. Harvest management control of the system appears to be adequate in the absence of the work products identified in this proposal. The strategy for the recovery and restoration effort of the Trustee Council was to develop enhanced management capabilities for damaged resources; that goal has been achieved. Do not fund.

Trustee Council Action

Fund project close-out only (analysis of FY 96 Kenai samples, and preparation of final report on Kenai and Kodiak studies). This concludes a 3-year effort to examine the effects of sockeye overescapement in the Kenai River system and in Red and Akalura lakes on Kodiak Island. The project has met its primary objective, which was to develop enhanced management capabilities for sockeye populations injured by the oil spill.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97259-CLO	Restoration of Coghill Lake Sockeye Salmon	G. Kyle/ADFG	ADFG	Cont'd 5th yr. 5 yr. project	\$46.8	\$0.0	\$0.0	\$0.0	\$46.8

Project Abstract

Coghill Lake has been historically the major producer of sockeye salmon in Prince William Sound and a mainstay of commercial and sport fisheries. Beginning in 1993, the Trustee Council has funded a program to fertilize Coghill Lake to increase zooplankton levels, which in turn benefits juvenile sockeye growth and survival. After three years of lake fertilization, primary and secondary productivity have increased, the smolt migrations have increased five-fold, and the escapement goal in 1995 was achieved. This does not constitute a complete recovery as the zooplankton density is lower than desired. However, sockeye production in this lake has increased to attain adequate escapement. A fifth year of lake fertilization originally envisioned and two years of post-fertilization assessment will not be completed, as the Chief Scientist has recommended that this project be closed out in FY 97.

Chief Scientist's Recommendation

This program was initiated in 1993 to restore the sockeye salmon run in Coghill Lake through fertilization and supplementation. Primary and secondary productivity in the lake are now at acceptable levels; smolt production is at an acceptable level; and adult escapements within the optimum range are being produced. Restoration objectives have therefore been achieved. In addition, the harvest of high levels of returning adults (see Table 1 in project's 1995 annual report), which compromises the restoration benefits, continues to be a major concern. Do not fund.

Trustee Council Action

Fund project close-out (preparation of final report). This concludes a 4-year effort to increase the productive capacity of Coghill Lake. Although the Trustee Council originally planned to fund five years of fertilization, the project has met its primary objectives -- primary and secondary productivity in Coghill Lake are at acceptable levels; smolt production is at an acceptable level; and adult escapements within the optimum range are being produced.

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97263	Assessment, Protection and Enhancement of Salmon Streams on Port Graham Corporation Lands	W. Meganack, Jr./Port Graham Corporation	ADFG	New 1st yr. 3 yr. project	\$58.0	\$115.0	\$12.0	\$0.0	\$185.0
<u>Project Abstract</u> This project will replace lost subsistence services resulting from the oil spill by conducting an inventory and assessment for ehancement projects on the four major salmon streams in the Lower Cook Inlet spill area. In FY 98 and FY 99, protection and enhancement projects will be implemented using instream fisheries habitat improvement techniques, primarily creation of spawning channels, removal of natural barriers to spawning, and construction of wall-based rearing structures. Local subsistence users will be employed as technical assistants during field surveys and construction. Port Graham Corporation will share costs of this project.		<u>Chief Scientist's Recommendation</u> This project will survey major salmon streams on Port Graham lands and develop protection and enhancement projects for pink, chum, and coho salmon on four streams. It is unlikely that the instream enhancement methods would have negative effects overall, and the project should achieve some of its goals with respect to enhanced fisheries. Fund.		<u>Trustee Council Action</u> Fund. This project will protect and enhance salmon streams important to the restoration of subsistence in the Port Graham area. This project will also serve as a model for protection of other salmon streams that cross land owned by Port Graham Corporation.					
97272-CLO	Chenega Chinook Release Program	J. Milton/Prince William Sound Aquaculture Corporation		Cont'd 5th yr. 5 yr. project	\$45.0	\$0.0	\$0.0	\$0.0	\$45.0
<u>Project Abstract</u> Chinook salmon incubated and reared at the Wally Noerenberg Hatchery will be released in Crab Bay, adjacent to the Native community of Chenega. Adult salmon returning to the site of release will provide replacement resources and associated services injured by the oil spill. Two releases have taken place (1994, 1995) as part of this multi-year project. Adult salmon will begin returning in 1996 and 1997, with larger numbers projected at nearly 1,000 adult fish returning in 1998 and thereafter.		<u>Chief Scientist's Recommendation</u> This is a continuing project with a sound technical approach. The annual report looked good, and the program is likely to produce 1,000-2,000 adult fish through 2002 as replacement subsistence resources for the village of Chenega Bay. Fund.		<u>Trustee Council Action</u> Fund final year of Trustee Council contribution. Project is designed to provide replacement resources for subsistence salmon injured by the oil spill.					

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97286	Elders/Youth Conference on Subsistence and the Oil Spill	B. Henrichs/Native Village of Eyak	DOI	New 1st yr. 2 yr. project	\$15.8	\$111.1	\$0.0	\$0.0	\$126.9
<u>Project Abstract</u> Building on the recommendations from the Community Conference on Subsistence and the Oil Spill sponsored by the Trustee Council in October 1995, this project will bring together elders and youth from all of the oil spill-affected communities to focus on the positive outcomes of the first conference's action items. FY 97 funds are for preliminary planning. Funds requested in FY 98 will be for holding the conference itself, which is scheduled to be held in Cordova in the fall of 1997.		<u>Chief Scientist's Recommendation</u> The Trustee Council has sponsored previous conferences on subsistence and the oil spill, and is continuing to implement community interactions through Project /052 and other projects. The need for another conference should be evaluated in FY 97 based on a survey of what has been accomplished since the last conference. Fund.			<u>Trustee Council Action</u> Fund conference planning in FY 97; the conference itself will be recommended for funding in FY 98. The conference, which will involve subsistence users from throughout the spill area and EVOS researchers, will focus on means to assist in the recovery of injured resources. The Trustee Council sponsored a similar conference in October 1995.				
97290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance	B. Nelson/NOAA		Cont'd 6th yr. 11 yr. project	\$76.3	\$74.8	\$74.8	\$224.4	\$450.3
<u>Project Abstract</u> This project is a continuation of the NRDA and restoration database management, hydrocarbon interpretation and sample storage service. Subsistence, response and restoration data will continue to be incorporated into the Trustee Council hydrocarbon database. A summary report for investigators and managers will be produced along with an electronic copy of the database that will allow easier access to this information.		<u>Chief Scientist's Recommendation</u> This is an essential project for overall success of the Restoration Program. Fund.			<u>Trustee Council Action</u> Fund. Project is on-going analysis of hydrocarbon data for other Trustee Council funded studies. This project will make these data available to the scientific community and the public, including "on-line" via the computer Internet.				

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Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97300	Synthesis of the Scientific Findings from the Exxon Valdez Oil Spill Restoration Program	R. Spies/Applied Marine Sciences	ADNR	New 1st yr. 3 yr. project	\$64.9	\$260.0			\$324.9
<u>Project Abstract</u> There have been numerous in-depth studies of injured species since 1989, on single species as well as the pelagic ecosystem (SEA/320), forage fish (APEX/163), and the nearshore ecosystem (NVP/025). Their results constitute an enormous amount of information on the northern Gulf of Alaska. This project will synthesize this information for the public and management agencies.		<u>Chief Scientist's Recommendation</u> This proposal was submitted at the request of the core scientific reviewers and the Executive Director.		<u>Trustee Council Action</u> Fund. The Trustee Council's research program is at a stage where efforts to synthesize information on the injury and recovery of injured species are strongly needed. This project will work with principal investigators who have conducted restoration projects and with ecological modelers to facilitate synthesis of existing information into both mathematical and written descriptions of the spill area ecosystem and how it changes in response to anthropogenic and natural events.					
97302	Prince William Sound Cutthroat Trout, Dolly Varden Char Inventory	K. Hodges/USFS		New 1st yr. 1 yr. project	\$12.8	\$0.0	\$0.0	\$0.0	\$12.8
<u>Project Abstract</u> Research on anadromous Dolly Varden char and cutthroat trout in Prince William Sound has been hampered by the lack of basic information on their distribution. Earlier studies stated that there are only a few streams in the Sound with these species, but after consultation with local residents it appears these fish are more widespread than previously believed. This project will consult local residents, government agencies, Native groups, and other knowledgeable individuals to determine where these species can be found. For systems on which there is no information, field crews will conduct surveys.		<u>Chief Scientist's Recommendation</u> This project contains good ideas, but it is competing with far more sophisticated proposals to do the same type of work. The site determination phase of this proposal, if coordinated with other concerned state and federal entities, could make a valuable contribution to development of a recovery strategy during FY 97. Consider funding the other element of the project later at a reduced level.		<u>Trustee Council Action</u> Fund the site determination element. Local knowledge will be used to determine which streams in Prince William Sound are known to have populations of cutthroat trout and Dolly Varden. This information could be useful in developing a restoration strategy for these species. The restoration strategy, which depends on the results of Project 145, will be developed during FY 97. Reconsider the other element of the project, estimation of the relative abundance of cutthroat trout and Dolly Varden, after a restoration strategy for these species has been developed.					

APPENDIX A: DESCRIPTION OF PROJECTS AND TRUSTEE COUNCIL ACTION**Page A-39**

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97304	Kodiak Island Borough Master Waste Management Plan	J. Selby/Kodiak Island Borough	ADEC	New 1st yr. 1 yr. project	\$267.5	\$0.0	\$0.0	\$0.0	\$267.5
<u>Project Abstract</u> This project will develop an island-wide waste management plan for Kodiak Island in order to remove chronic sources of marine pollution and solid waste that may be affecting recovery of resources and services injured by the oil spill. The plan will focus on the six remote coastal villages which currently do not have adequate waste management practices and facilities. The master plan will be oriented towards achieving practical, measurable results through a project approach that involves the villages working together with the Kodiak Area Native Association and the Kodiak Island Borough to identify and implement opportunities for cost-effectively reducing sources of marine pollution.		<u>Chief Scientist's Recommendation</u> There is need to reduce sources of chronic marine pollution in the Kodiak area, as was done for communities in Prince William Sound. Those types of waste that end up in the marine environment and which conceivably could affect injured species are most appropriate for Trustee Council action. Fund.		<u>Trustee Council Action</u> Fund. This project will reduce chronic pollution in the marine environment near communities on Kodiak Island and thereby reduce stress on recovering resources and services. The focus of the project will be the six remote villages on the island. The waste streams that will be addressed in this regional plan are used oil generated by vessels and communities, household hazardous waste, solid waste, and sewage.					
97306	Ecology and Demographics of Pacific Sand Lance in Lower Cook Inlet	J. Piatt/DOI-NBS		New 1st yr. 3 yr. project	\$32.8	\$30.0	\$20.0	\$0.0	\$82.8
<u>Project Abstract</u> The purpose of this project is to characterize the basic ecology, distribution and demographics of sand lance in lower Cook Inlet. Recent declines of upper trophic level species in the Gulf of Alaska have been linked to decreasing availability of forage fish. Sand lance is the most important forage fish in most nearshore areas of the northern Gulf. Despite its importance to fish, seabirds, and marine mammals, little is known or published on the basic biology of this key prey species.		<u>Chief Scientist's Recommendation</u> This is a novel and exceptionally useful contribution to understanding of a forage fish species that is very important to injured resources and the marine ecosystem. The project relies on a graduate student under good supervision and is very cost effective. Fund, including a literature review on sand lance biology.		<u>Trustee Council Action</u> Fund. This project would study sand lance, an important forage fish in the northern Gulf of Alaska. Sand lance populations have been in decline in recent years and should be studied in order to understand marine ecosystems as they may affect injured seabirds and marine mammals.					

APPENDIX A: DESCRIPTION OF PROJECTS AND TRUSTEE COUNCIL ACTION**Page A-40**

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97320	Sound Ecosystem Assessment (SEA)	T. Cooney, et al.	ADFG	Cont'd 4th yr. 6 yr. project	\$3,618.3	\$1,947.2			\$5,565.5

Project Abstract

This project is describing mechanisms of mortality for juvenile populations of pink salmon and Pacific herring in Prince William Sound. This information is being used to create a series of dynamic numerical models and an attendant nominal monitoring program to affect the restoration of these species through management options. The mechanisms influencing the distribution and growth rates of juveniles are being investigated by oceanographic studies. Mechanisms of predation and starvation are being studied by fisheries scientists and marine ecologists.

Chief Scientist's Recommendation

This is an excellent program that has undergone independent and thorough technical review annually. The program should better articulate the practical benefits and applications to be derived from the research, including a schedule for production of potential management tools. Key parameters for routine monitoring of the system to determine likely productivity of pink salmon and herring need to be identified. Continued improvement of the interaction between the modelers and the field scientists is required, as is a plan to integrate the results of SEA with the work of APEX(/163) and NVP(/025). In terms of the long-range scope of the program, resolution of the major hypotheses will be necessary over the next year prior to decisions about funding after the FY 99 closeout.

Trustee Council Action

Fund. Significant progress has been made to address the central SEA hypotheses. The program is now at a point when field work is transitioning to modeling and analysis. FY 98 will be the final year for most of the present SEA projects and only modest closeout funding is anticipated in FY 99 as a final synthesis year. Further herring research beyond FY 98 is uncertain and must be reevaluated in the context of other herring work and other restoration proposals. A key issue to be addressed in FY 97 is ensuring that SEA predictive models are useful to/used by resource managers. Further interaction between SEA investigators and resource managers appears needed. Clarification of any long-term data collection and monitoring to support predictive models is also critical to ensure that models can be maintained over time. On-going efforts to integrate the major ecosystem research projects (SEA, NVP and APEX) should be pursued during FY 97 and used to guide future funding decisions. In recognition of funds included in the FY 97 recommendation for additional data/modeling work (\$207.0) and for PWSSC's FY 98 report writing of FY 97 results (\$445.8), total SEA funding in FY 98 is projected to be \$1,947.2 (including agency administrative costs).

APPENDIX A: DESCRIPTION OF PROJECTS AND TRUSTEE COUNCIL ACTION

Page A-41

Project Number	Project Title	Proposer	Lead Agency	New or Cont'd	FY 97 Approved	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	FY97-02 Estimate
97424	Restoration Reserve	All Trustee Council Agencies	ALL	Cont'd 4th yr. 9 yr. project	\$12,000.0	\$12,000.0	\$12,000.0	\$36,000.0	\$72,000.0
<u>Project Abstract</u> In recognition of the fact that complete recovery from the oil spill may not occur for decades, the Trustee Council established the Restoration Reserve to hold funds to be used for restoration after the last payment is received from Exxon Corporation in September 2001. The \$12 million recommended for deposit in FY 97 would be the fourth deposit into the reserve account and would bring the total in the account to \$48 million. Annual deposits of \$12 million in each of the next five years would provide a reserve of \$108 million plus interest. These funds will be used for restoration activities, but no allocation of the funds to specific activities has yet been made.			<u>Chief Scientist's Recommendation</u> Proposal not reviewed.			<u>Trustee Council Action</u> Fund. The Restoration Reserve will help ensure that restoration can continue beyond the time of the final payment from Exxon.			
97427	Harlequin Duck Recovery Monitoring	D. Rosenberg/ADFG		Cont'd 4th yr.	\$252.5				\$252.5
<u>Project Abstract</u> Harlequin duck populations have not recovered from injuries sustained from the oil spill. Proposed surveys are designed to assess the extent of recovery of ducks inhabiting oiled areas and determine if low reproductive success has resulted in changes in population structure and productivity that may limit recovery. Shoreline boat surveys will be used to compare population age and sex structure, distribution, abundance, and productivity between oiled and unoled areas in Prince William Sound in late-winter, spring, and late-summer. Changes in population size, structure, and production in oiled and unoled areas within and between years will be compared. Continued population monitoring and brood surveys will allow us to assess trends and suggest factors limiting recovery.			<u>Chief Scientist's Recommendation</u> There continues to be concern about the status of harlequin ducks, especially in regard to reproduction and survival, and this is an important project to track populations of harlequin ducks in Prince William Sound. The additional cost for winter surveys that have the potential to increase knowledge of the dynamics of different sectors of the population is a justified effort that may help explain population dynamics in western Prince William Sound.			<u>Trustee Council Action</u> Fund. This project continues basic assessment of the recovery status of harlequin ducks in Prince William Sound, and includes funds for soliciting traditional knowledge from local residents. In the future (FY 98 and beyond), work on harlequin ducks needs to be more tightly integrated and consolidated into one or two projects.			

Exxon Valdez Oil Spill Trustee Council

Restoration Office

645 G Street, Suite 401, Anchorage, Alaska 99501-3451

Phone: (907) 278-8012 Fax: (907) 276-7178



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Oil Spill Public Information Center
645 G Street
Anchorage, AK 99501

AGENDA

EXXON VALDEZ OIL SPILL SETTLEMENT

TRUSTEE COUNCIL CONTINUATION MEETING

FEBRUARY 14, 1997 @ 8:30 A.M.

645 G STREET, ANCHORAGE

RECEIVED
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2/7/97

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD
1:18 pm
DRAFT

Trustee Council Members:

BRUCE BOTELHO/CRAIG TILLERY
Attorney General/Trustee
State of Alaska/Representative

MICHELE BROWN
Commissioner
Alaska Department of Environmental
Conservation

GEORGE T. FRAMPTON, JR./DEBORAH WILLIAMS
Assistant Secretary/Trustee Representative
for Fish & Wildlife & Parks
U.S. Department of the Interior

PHIL JANIK
Regional Forester - Alaska Region
U.S. Department of Agriculture
Forest Service

STEVE PENNOYER
Director, Alaska Region
National Marine Fisheries Service

FRANK RUE
Commissioner
Alaska Department of Fish & Game

Teleconferenced in Juneau, LIO, Goldstein Building, Room 319
Craig Tillery, Chair

1. Call to Order 8:30 a.m.
 - Approval of Agenda
 - Approval of December 6, 1996 meeting notes
2. Executive Director's Report - Molly McCammon
 - Administrative Issues
 - Office Space
 - Quarterly Project Status Report
 - Quarterly Financial Status Report
 - Status of Audit
 - FY98 Invitation and Work Plan
 - Other
3. Public Comment - 9 a.m.
4. Status Report on the Archaeological Planning Effort

Trustee Agencies

State of Alaska: Departments of Fish & Game, Law, and Environmental Conservation
United States: National Oceanic and Atmospheric Administration, Departments of Agriculture and Interior

5. Data Policy*
6. Deferred Work Plan Projects
 - Amendment to 97100 for Video Production*
 - Project 97162 - Herring Disease*
 - Project 97248 - Historical Data and Local TEK - Herring*
 - Project 97254 - Delight/Desire Lake*
7. Recognition of George T. Frampton, Jr. and Doug Hall
8. Executive Session on Habitat and Executive Director's Evaluation
9. English Bay Acquisition*
10. Small Parcel Program*
 - Status Report
 - KEN 1038 - Roberts (Schilling) Parcel

* indicates tentative action items

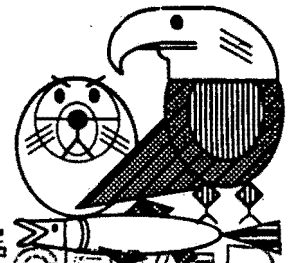
Adjourn - 1:30 p.m.

Exxon Valdez Oil Spill Trustee Council

Restoration Office

645 G Street, Suite 401, Anchorage, Alaska 99501-3451

Phone: (907) 278-8012 Fax: (907) 276-7178



TRUSTEE COUNCIL MEETING ACTIONS

December 6, 1996 @ 10 a.m.

FEB 10 1997

By Molly McCammon
Executive Director

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Trustee Council Members Present:

- Jim Wolfe, USFS
- Deborah Williams, USDOJ
- Bill Hines, NMFS

- Janet Kowalski, ADF&G
- Michele Brown, ADEC
- * ● Craig Tillery, ADOL

* Chair

● Alternates:

Janet Kowalski served as an alternate for Frank Rue for the entire meeting.

Al Ewing served as an alternate for Michele Brown for a portion of the meeting.

Bill Hines served as an alternate for Steve Pennoyer for the entire meeting. Steve Pennoyer was present during the Executive Session.

Jim Wolfe served as an alternate for Phil Janik for the entire meeting. Phil Janik was present during the Executive Session.

Deborah Williams served as an alternate for George T. Frampton, Jr. for the entire meeting.

Craig Tillery served as an alternate for Bruce Botelho for the entire meeting.

1. Approval of the Agenda

APPROVED MOTION: Approved the Agenda. Motion by Williams, second by Brown.

2. Approval of the Meeting Minutes

APPROVED MOTION: Approved November 8, 1996 Trustee Council meeting notes. Motion by Williams, second by Hines.

3. Natural Resources Damage Assessment Reports

APPROVED MOTION: Adopted option number 4 - to address what to do with NRDA projects without a final report on a case by case basis and report back to the Trustee Council within six months on their status. Motion by Williams, second by Brown.

Trustee Agencies

State of Alaska: Departments of Fish & Game, Law, and Environmental Conservation

United States: National Oceanic and Atmospheric Administration, Departments of Agriculture and Interior

4. Archaeology Planning Project

APPROVED MOTION: Approved \$12,100 to print additional Archaeology Planning Reports, postage for the distribution of the reports and for three staff members to travel to the communities to hold public meetings and develop further options for Council consideration. Motion by Williams, second by Brown.

5. Restoration Reserve Plan

APPROVED MOTION: Approved Executive Director's recommendation to begin public planning process on Restoration Reserve.

6. Public Comment Period

Eight members of the public testified from Anchorage and one individual testified from Homer.

7. Executive Session

APPROVED MOTION: Adjourn into Executive Session to discuss Habitat Protection, Public Advisory Group nominations, the Executive Director's evaluation, and the Exxon settlement re-opener clause. Motion by Wolfe, second by Brown.

(Off Record at 12:04 p.m.)

(On Record at 1:35 p.m.)

8. Public Advisory Group Nominations

APPROVED MOTION: Nominated the following individuals to sit on the Public Advisory Group for the 1997 - 1998 term:

Mary McBurney - Aquaculture
Torie Baker - Commercial Fishing
Eleanore Huffines - Commercial Tourism
Chip Dennerlein - Conservation
Pam Brodie - Environmental
Howard Valley - Forest Products
Dave Cobb - Local Government
Chuck Totemoff - Native Landowner
Stacey Studebaker - Recreation Users
Rupert Andrews - Sport Hunting and Fishing
Nancy Yeaton - Subsistence
Chuck Meacham - Science/Academic
Chris Beck - Public-at-Large
Vern McCorkle - Public-at-Large

Sheri Buretta - Public-at-Large
Jim King - Public-at-Large
Brenda Schwantes - Public-at-Large
Motion by Hines, second by Ewing.

DRAFT

9. Traditional Ecological Knowledge Protocols

APPROVED MOTION: Adopt the Executive Director's recommended guidelines for including indigenous knowledge in the restoration process. Motion by Williams, second by Hines.

10. Data Ownership and Archiving Policy

APPROVED MOTION: Deferred action on policy pending further review.

11. 1997 Deferred Project Proposals

APPROVED MOTION: Adopt the Executive Director's recommendations on the deferred project proposals for 1997 totaling \$609,200. Request additional information on Project 97254, Delight and Desire Lakes Fertilization. Motion by Williams, second by Ewing.

12. Tatitlek

APPROVED MOTION: Adopt the revised Tatitlek resolution accepting Tatitlek Corporation's counteroffer of \$33,800,000 (from \$33,000,000) for various interests in 66,000 acres plus a timber only conservation easement on the Sunny Bay parcel (approximately 2,445 additional acres). Motion by Wolfe, second by Williams.

13. Horseshoe Bay/PWS 11

APPROVED MOTION: Authorize the Alaska Department of Natural Resources to acquire the Horseshoe Bay parcel (PWS 11), consisting of 1,600 feet of Horseshoe Bay frontage and including the mouth of an anadromous stream, for the approved appraisal price of \$475,000. Motion by Wolfe, second by Kowalski.

14. Johnson Parcel KAP 114

APPROVED MOTION: Authorize the U.S. Fish and Wildlife Service to acquire the Johnson Parcel (KAP 114), consisting of 55 acres located within Uyak Bay for the approved appraisal price of \$154,000. Motion by Williams, second by Hines.

15. Kenai Natives Association Small Parcels

APPROVED MOTION: Adopt a motion clarifying that with the KNA acquisition, the state is to receive conservation easements only with respect to the Stephanka and Moose River patented tracts. Motion by Williams, second by Ewing.

16. Coordination with Native Groups at the Alaska SeaLife Center

APPROVED MOTION: Encourage the Executive Director of the Alaska SeaLife Center "to work closely with the local Native community on the issues including, consideration of the request for formation of a committee, or other working group, for the purpose of assisting the SeaLife Center in producing a respectful and accurate representation of the traditional heritage of Alaskan Native Culture." Motion by Williams, second by Ewing.

Meeting adjourned at 3:17 p.m.

DRAFT

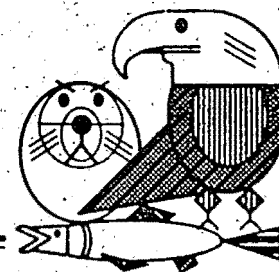
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Exxon Valdez Oil Spill Trustee Council

Restoration Office

645 G Street, Suite 401, Anchorage, Alaska 99501-3451

Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

TO: Trustee Council Members

FROM: Sandra Schubert
Project Coordinator

THROUGH: Molly McCammon
Executive Director

DATE: February 12, 1997

RE: Quarterly Project Status Summary -- December 31, 1996

RECEIVED
FEB 1 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Attached is the *Exxon Valdez* Oil Spill Project Status Summary for the quarter ending December 31, 1996, for all projects funded by the Trustee Council during 1992, 1993, 1994, 1995, 1996, and 1997. The Summary focuses on the status of annual and final reports, and includes progress updates for FY 97 projects.

As of December 31, 1996, a total of 138 project reports had been peer reviewed and accepted by the Chief Scientist. Once accepted by the Chief Scientist, reports are submitted to the Oil Spill Public Information Center (OSPIC). As of December 31, 1996, 125 reports were available to the public through OSPIC and other libraries around the state. (See **Attachment C** for a list of libraries, and a list of reports available).

This memorandum summarizes the status of reports for each project year. **Attachment A** summarizes the status of reports by agency. **Attachment B** lists the reports that are significantly behind schedule. Reports are considered significantly behind schedule if (1) they have not yet been submitted to the Chief Scientist or were reviewed by the Chief Scientist, returned to the PI for revision longer ago than six months, and have not been revised and resubmitted to the Chief Scientist and (2) an extended due date has not been approved by the Restoration Office.

Status of 1992 Project Reports as of December 31, 1996

A total of 60 projects were funded in the 1992 Work Plan. With very few exceptions, a final report -- that is, a report that is subject to peer review and approval by the Chief Scientist -- is required on each 1992 project. Some projects require more than one report. (NOTE: Reports

Trustee Agencies

State of Alaska: Departments of Fish & Game, Law, and Environmental Conservation

United States: National Oceanic and Atmospheric Administration, Departments of Agriculture and Interior

"in progress" are in peer review, are under revision by the PI in response to peer reviewer comments, or have been revised and are undergoing a second review by the Chief Scientist.)

<u>Reports Available to Public at OSPIC</u>	<u>Reports Accepted by Chief Scientist</u>	<u>Reports in Progress</u>	<u>No Report Yet Submitted</u>
59	64	18*	1

* NOTE: This figure includes 9 more reports than it did in previous quarters. The report for Project FS11 will consist of 10 articles being prepared for the Canadian Journal of Fisheries and Aquatic Science. Each of these articles is now being tracked as a separate report.

Status of 1993 Project Reports as of December 31, 1996

A total of 37 projects were funded in the 1993 Work Plan. With some exceptions, a final report is required on each 1993 project. Some projects require more than one report.

<u>Reports Available to Public at OSPIC</u>	<u>Reports Accepted by Chief Scientist</u>	<u>Reports in Progress</u>	<u>No Report Yet Submitted</u>
19	21	5	2

Status of 1994 Project Reports as of December 31, 1996

A total of 42 projects were funded in the 1994 Work Plan. With some exceptions, a report that is subject to peer review by the Chief Scientist is required on each 1994 project. Some projects require more than one report.

<u>Reports Available to Public at OSPIC</u>	<u>Reports Accepted by Chief Scientist</u>	<u>Reports in Progress</u>	<u>No Report Yet Submitted</u>
28	31	6	0

Status of 1995 Project Reports as of December 31, 1996

A total of 66 projects were funded in the FY 95 Work Plan. With some exceptions, a report that is subject to peer review by the Chief Scientist is required on each 1995 project. Some projects require more than one report.

<u>Reports Available to Public at OSPIC</u>	<u>Reports Accepted by Chief Scientist</u>	<u>Reports in Progress</u>	<u>No Report Yet Submitted</u>
19	22	24	4

Status of 1996 Projects as of December 31, 1996

Annual reports (for continuing projects) or final reports (for completed projects) are due April 15, 1997 for all projects funded in the FY 96 Work Plan, unless an extended due date is agreed to by the Restoration Office. While I expect most reports to arrive on schedule (two have already been received), some extensions will likely be granted, particularly for final reports that are analyzing data from multiple years (e.g., Project 1258, Sockeye Salmon Overescapement). As it did last year, the *Invitation to Submit Restoration Proposals for FY 98* makes clear that FY 98 projects will not be authorized for any PI who has an overdue report.

Status of 1997 Projects as of December 31, 1996

October-to-December 1996 was the start-up quarter for most projects funded in the FY 97 Work Plan. A few projects have had a delayed start, due primarily to the time associated with execution of contracts. Examples are Project 97263/Port Graham Stream Assessment, for which contract negotiations between ADF&G, Port Graham Corporation, and the Kenai Economic Development District are still underway; and Project 97223/Publication of Sea Otter Data, for which contract negotiations between NOAA and Enhydra Research were delayed until December. The tentative schedule for the FY 98 work plan calls for Trustee Council action in early August, rather than at the end of August as it was this year. This will allow additional time for contract preparation prior to the beginning of the federal fiscal year, which I hope will reduce or eliminate contract-related delays in project start-up.

Project activity of interest this quarter includes: a TEK Advisory Group was established and two TEK specialists were hired (Project 97052B), an aerial survey of sea otters was conducted in Prince William Sound (Project 97025), thermal marks were applied to FY 96 pink salmon embryos at four hatcheries (Project 97188), nominations were solicited for a second round of projects designed to restore habitat along the Kenai River (Project 97180), and a contractor was selected to design the EVOS stations called for in the Sound Waste Management Plan (Project 97115).

In addition, at least one manuscript was accepted for publication (Project 96074): Iverson, S.J., K.J. Frost, and L.F. Lowry. Fatty acid signatures reveal fine scale structure of foraging

distribution of harbor seals and their prey in Prince William Sound, Alaska. Marine Ecology Progress Series. Twenty-five students were selected for participation in the Youth Area Watch project, Project 97210 (four from Tatitlek, three from Chenega Bay, four from Cordova, five from Valdez, two from Whittier, six from Seward, and one from Hinchinbrook Island). Some of the students participated in a physical oceanography cruise in December (Project 97320M). Others received AWL (age, weight, length) protocol training during the November/December juvenile herring cruises (Project 97320T).

Conclusion

In brief, progress continues to be made toward completion and public availability of project reports. In total, 199 reports will be produced for projects funded in 1992, 1993, 1994, and 1995. As of December 31, 138 of these reports had been peer reviewed and accepted by the Chief Scientist and only 7 had not yet been submitted for peer review. Perhaps more importantly, 125 reports on studies funded by the Trustee Council are now available to the public through OSPIC.

ATTACHMENT A

Summary of Project Report Status as of December 31, 1996

1992 WORK PLAN

AGENCY	NUMBER OF REPORTS	Not Yet Submitted to Chief Sci.	In Progress	Peer Rev'd/ Accepted by Chief Scientist	Available to Public at OSPIC
ADEC	2	0	0	2	2
ADFG	26	1	13	21	21
ADNR	1	0	0	1	1
DOI	33	0	5	28	25
NOAA	11	0	0	10	10
USFS	2	0	0	2	0
TOTAL	84	1	18	64	59

1993 WORK PLAN

AGENCY	NUMBER OF REPORTS	Not Yet Submitted to Chief Sci.	In Progress	Peer Rev'd/ Accepted by Chief Scientist	Available to Public at OSPIC
ADEC	2	0	1	1	1
ADFG	12	1	3	8	8
ADNR	0	0	0	0	0
DOI	9	1	1	7	6
NOAA	3	0	0	3	3
USFS	2	0	0	2	1
TOTAL	28	2	5	21	19

1994 WORK PLAN

AGENCY	NUMBER OF REPORTS	Not Yet Submitted to Chief Sci.	In Progress	Peer Rev'd/ Accepted by Chief Scientist	Available to Public at OSPIC
ADEC	1	0	0	1	0
ADFG	19	0	3	16	16
ADNR	2	0	0	2	2
DOI	6	0	2	4	3
NOAA	5	0	0	5	5
USFS	4	0	1	3	2
TOTAL	37	0	6	31	28

ATTACHMENT A

Summary of Project Report Status as of December 31, 1996

1995 WORK PLAN

AGENCY	NUMBER OF REPORTS	Not Yet Submitted to Chief Sci.	In Progress	Peer Rev'd/ Accepted by Chief Scientist	Available to Public at OSPIC
ADEC	4	1	1	2	1
ADFG	25	0	14	10	10
ADNR	1	0	0	1	1
DOI	6	1	3	3	2
NOAA	8	2	4	2	3
USFS	6	0	2	4	2
TOTAL	50	4	24	22	19

ATTACHMENT B

Reports Significantly Behind Schedule

Agency	Project Number	PI	Final or Annual	Project Title	Status of Report
DOI	MM6	Ballachey	Final	Sea otter	Due date extended to 1/31/97 (reports #2, 3, 16)
DOI	93006	Birkedahl	Final	Site specific archaeology	Never submitted
DOI	94266-1	Irvine	Final	Fate/persistence of oil	Peer reviewed and returned to PI for revision 4/8/95; due date for revision extended to 10/30/96; not received
DOI	95029	Schempf	Final	Bald eagles	Peer reviewed; returned to PI for revision 4/8/96
DOI	95038	PSG	Final	Pacific Seabird Group -- conference	Draft under review by contributors; expected to submit to Chief Scientist 11/96; not received
ADFG	B11	Rothe	Final	Harlequin duck damage assessment	Peer reviewed; returned to PI for revision 2/13/96
ADFG	FS01	Fried, Bue	Final	Spawning area injury	Never submitted; was expected 10/1/96; not received
ADFG	93033-1	Rothe	Final	Harlequin duck - Afognak habitat assessment/PWS production	Peer reviewed; returned to PI for revision 11/14/95
ADFG	93033-2	Rothe	Final	Harlequin duck restoration	Never submitted; waiting for contractor's (Fry) analysis
ADFG	94279	Miraglia	Final	Food safety testing	Peer reviewed; returned to PI for revision 6/12/96
ADFG	95166	Willette	Annual	Herring natal habitats	Peer reviewed; returned to PI for revision 6/10/96
DEC	93038	Was Piper; now who?	Final	Shoreline assessment	Peer reviewed; returned to PI for revision 1/26/96; was expected 11/96; not received
NOAA	95090	Babcock	Final	Mussel bed monitoring	Never submitted; was due 9/30/96; then expected 11/10/96; not received

ATTACHMENT B
Reports Significantly Behind Schedule

NOAA	95121	Worthy	Annual	Fatty acid signatures of forage fish	Report submitted was incomplete so returned to PI (2/97); now waiting for submittal of complete draft
USFS	95007B	Yarborough	Final	Archaeological site restoration	Status unclear; only partial draft was submitted for peer review. Need to identify date for completion of draft

OIL SPILL PUBLIC INFORMATION CENTER

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**Final Reports
January 1997**

Attached is a list of published final reports for Natural Resource Damage Assessment Studies and Restoration Projects. Copies of these reports may be checked out from the Oil Spill Public Information Center. Copies are also available for viewing at the following libraries:

A. Holmes Johnson Library - Kodiak
Alaska Historical Library - Juneau
Alaska Resources Library - Anchorage
Alaska State Library - Juneau
Alaska Department of Environmental Conservation Library - Juneau
Alaska Department of Fish and Game Habitat Library - Anchorage
Auke Bay Fisheries Lab Library - Juneau
Cordova Public Library - Cordova
E.E. Rasmusson Library - University of Alaska, Fairbanks
Kenai Community Library - Kenai
Ketchikan Public Library - Ketchikan
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University of Alaska, Anchorage Consortium Library - Anchorage
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University of Washington Library - Seattle
U.S. Fish and Wildlife Service Library - Anchorage
Valdez Consortium Library - Valdez
Z.J. Loussac Library - Anchorage

Copies of the final reports may be purchased from the following:

Anchorage Copy Centers:

Clay's Printing - (907) 561-6270

TimeFrame - (907) 562-3822

National Technical Information Service (NTIS) - (703) 487-4650

FINAL REPORTS

January 1997

Natural Resource Damage Assessment Studies

* = new additions to this list.

Air/Water 3

Short, J.W. and P.M. Harris. 1996. Petroleum hydrocarbons in near-surface seawater of Prince William Sound, Alaska, following the *Exxon Valdez* oil spill I: Chemical sampling and analysis, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Air/Water Study Number 3), National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Auke Bay, Alaska. (NTIS No. PB96-196951)

Air/Water 3 (Subtidal 3A)

Short, J.W. and P. Rounds. 1995. Petroleum hydrocarbons in near-surface seawater of Prince William Sound, Alaska, following the *Exxon Valdez* oil spill II: analysis of caged mussels, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Air/Water Study Number 3, Subtidal Study Number 3A), National Oceanic and Atmospheric Administration, Juneau, Alaska. (NTIS No. PB96-196969)

Archaeology 1

Reger, D.R., J.D. McMahan, and C.E. Holmes. 1992. Effect of crude oil contamination on some archaeological sites in the Gulf of Alaska, 1991 investigations, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Archaeology Study Number 1), Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of History and Archaeology, Anchorage, Alaska. (NTIS No. PB96-194659)

Bird 2

Klosiewski, S.P. and K.K. Laing. 1994. Marine bird populations of Prince William Sound, Alaska, before and after the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Bird Study Number 2), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB97-112684)

Bird 3

Nyswander, D.R., C.H. Dippel, G.V. Byrd, and E.P. Knudtson. 1993. Effects of the *Exxon Valdez* oil spill on murrelets: a perspective from observations at breeding colonies, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Bird Study Number 3), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB97-112700)

Bird 4

Bowman, T.D., P.F. Schempf, and J.A. Bernatowicz. 1993. Effects of the *Exxon Valdez* oil spill on bald eagles, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Bird Study Number 4), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-204250)

Bird 6

Kuletz, K.J. 1994. Marbled murrelet abundance and breeding activity at Naked Island, Prince William Sound,

and Kachemak Bay, Alaska, before and after the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Bird Study Number 6), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB97-112692)

Bird 7

Nishimoto, G. and G.V. Byrd. 1993. Effects of the *Exxon Valdez* oil spill on fork-tailed storm petrels breeding in the Barren Islands, Alaska, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Bird Study Number 7), U.S. Fish and Wildlife Service, Homer, Alaska. (NTIS No. PB97-112676)

Bird 9

Oakley, K.L. and K.J. Kuletz. 1994. Population, reproduction and foraging of pigeon guillemots at Naked Island, Alaska, before and after the *Exxon Valdez* oil spill. *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Bird Study Number 9), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-204276)

Bird 12/Restoration Study 17

Andrés, B.A. 1995. The effects of the *Exxon Valdez* oil spill on black oystercatchers breeding in Prince William Sound, Alaska, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Bird Study Number 12, Restoration Study Number 17), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-204292)

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Fish/Shellfish 2

Sharr, S., B.G. Bue, S.D. Moffitt, A. Craig, and D.G. Evans. 1994. Injury to salmon eggs and preemergent fry in Prince William Sound, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Fish/Shellfish Study Number 2), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Cordova, Alaska. (NTIS No. PB96-194840)

Fish/Shellfish 3

Sharr, S., C.J. Peckham, D.G. Sharp, L. Peltz, J.L. Smith, M.T. Willette, D.G. Evans, and B.G. Bue. 1996. Coded wire tag studies on Prince William Sound salmon, 1989-1991, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Fish/Shellfish Study Number 3), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Anchorage, Alaska. (NTIS No. PB96-196936)

Fish/Shellfish 4

Wertheimer, A.C., A.G. Celewycz, M.G. Carls, and M.V. Sturdevant. 1994. Impact of the oil spill on juvenile pink and chum salmon and their prey in critical nearshore habitats, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Fish/Shellfish Study Number 4, NMFS Component), National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Auke Bay Laboratory, Juneau.

Alaska.

Fish/Shellfish 4A

Willette, T.M., G. Carpenter, P. Shields, and S.R. Carlson. 1994. Early marine salmon injury assessment in Prince William Sound, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Fish/Shellfish Study Number 4A), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Cordova, Alaska. (NTIS No. PB96-194758)

Fish/Shellfish 5 (Restoration 90)

Hepler, K.R., P.A. Hansen and D.R. Bernard. 1994. Impact of oil spilled from the *Exxon Valdez* on survival and growth of Dolly Varden and cutthroat trout in Prince William Sound, Alaska, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Fish/Shellfish Study Number 5; Restoration Study Number 90), Alaska Department of Fish and Game, Division of Sport Fish, Anchorage, Alaska.

Fish/Shellfish 7B and 8B

Swanton, C.O., T.J. Dalton, B.M. Barrett, D. Pengilly, K.R. Brennan, and P.A. Nelson. 1993. Effects of pink salmon (*Oncorhynchus gorbuscha*) escapement level of egg retention, preemergent fry, and adult returns to the Kodiak and Chignik management areas caused by the *Exxon Valdez* oil spill, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Fish/Shellfish Study Number 7B and 8B), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Kodiak, Alaska.

Fish/Shellfish 18

Haynes, E., T. Rutecki, M. Murphy, and D. Urban. 1995. Impacts of the *Exxon Valdez* oil spill on bottomfish and shellfish in Prince William Sound, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Fish/Shellfish Study Number 18), U.S. National Marine Fisheries Service, Auke Bay Laboratory, Juneau, Alaska.

Fish/Shellfish 22

Freese, J.L. and C.E. O'Clair. 1995. Injury to crabs outside Prince William Sound, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Fish/Shellfish Study Number 22), National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Auke Bay Laboratory, Juneau, Alaska. (NTIS No. PB96-194782)

Fish/Shellfish 27

Schmidt, D.C., K.E. Tarbox, B.M. Barrett, L.K. Brannian, S.R. Carlson, J.A. Edmundson, J.M. Edmundson, S.G. Honnold, B.E. Kind, G.B. Kyle, P.A. Roche, P. Shields, and C.O. Swanton. 1993. Sockeye salmon overescapement, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Fish/Shellfish Study Number 27), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Soldotna, Alaska.

Fish/Shellfish 28

Geiger, H.J., W.D. Templin, J.S. Collie, and T.J. Quinn II. 1995. Run reconstruction and life history model, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Fish/Shellfish Study Number 28), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Juneau, Alaska. (NTIS No. PB96-208418)

Fish/Shellfish 30

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Marine Mammal 1

Dahlheim, M.E. and O. von Ziegesar. 1993. Effects of the *Exxon Valdez* oil spill on the abundance and distribution of humpback whales (*Megaptera novaeangliae*) in Prince William Sound, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Marine Mammal Study Number 1)*, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Seattle, Washington. (NTIS No. PB96-194634)

Marine Mammal 2

Dahlheim, M.E. and C.O. Matkin. 1993. Assessment of injuries to killer whales in Prince William Sound, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Marine Mammal Study Number 2)*, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Seattle, Washington. (NTIS No. PB96-194642)

Marine Mammal 5 (Restoration Study 73)

Frost, K.J. and L.F. Lowry. 1994. Assessment of injury to harbor seals in Prince William Sound, Alaska, and adjacent areas following the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Marine Mammal Study Number 5, Restoration Study Number 73)*, Alaska Department of Fish and Game, Wildlife Conservation Division, Fairbanks, Alaska. (NTIS No. PB96-197116)

Marine Mammal 6-1

Ballachey, Brenda. 1995. Biomarkers of damage to sea otters in Prince William Sound, Alaska following potential exposure to oil spilled from the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Marine Mammal Study Number 6-1)*, U.S. Fish and Wildlife Service, Anchorage, Alaska.

Marine Mammal 6-4

Bodkin, J.K., D.M. Mulcahy, C.J. Lensink. 1996. Age-specific reproduction in female sea otters (*Enhydra lutris*) from Southcentral Alaska: analysis of reproductive tracts, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Marine Mammal Study Number 6-4)*, U.S. Fish and Wildlife Service, Anchorage, Alaska.

Marine Mammal 6-5

Bodkin, J.L. and M.S. Udevitz. 1995. An intersection model for estimating sea otter mortality from the *Exxon Valdez* oil spill along the Kenai Peninsula, Alaska, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Marine Mammal Study Number 6-5)*, U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-194980)

Marine Mammal 6-7

DeGange, A.R., D.C. Douglas, D.H. Monson, and C.M. Robbins. 1995. Surveys of sea otters in the Gulf of Alaska in response to the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource*

Damage Assessment Final Report (Marine Mammal Study Number 6-7), U.S Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-195003)

Marine Mammal 6-9

Doroff, A.M., and A.R. DeGange. 1995. Experiments to determine drift patterns and rates of recovery of sea otter carcasses following the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-9), U.S Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-194972)

Marine Mammal 6-10

Lipscomb, T.P., R.K. Harris, R.B. Moeler, J.M. Pletcher, R.J. Haebler, and B.E. Ballachey. 1996. Histopathologic lesions associated with crude oil exposure in sea otters, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-10), U.S Fish and Wildlife Service, Anchorage, Alaska.

Marine Mammal 6-11

Lipscomb, T.P., R.K. Harris, A.H. Rebar, B.E. Ballachey, and R.J. Haebler. 1996. Pathological studies of sea otters, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-11), U.S Fish and Wildlife Service, Anchorage, Alaska.

Marine Mammal 6-12

Monnett, C. and L.M. Rotterman. 1992. Movements of weanling and adult female sea otters in Prince William Sound, Alaska after the TV *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-12), U.S Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-194899)

Marine Mammal 6-13

Monnett, C. and L.M. Rotterman. 1992. Mortality and reproduction of female sea otters in Prince William Sound, Alaska, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-13), U.S Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-195964)

Marine Mammal 6-14

Monnett, C. and L.M. Rotterman. 1992. Mortality and reproduction of sea otters oiled and treated as a result of the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-14), U.S Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-196902)

Marine Mammal 6-15

Monson, D.H. and B. Ballachey. 1995. Age distributions of sea otters found dead in Prince William Sound, Alaska following the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-15), U.S Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-194675)

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Rebar, A.H., B.E. Ballachey, D.K. Bruden, and K.A. Kloecker. 1996. Hematology and clinical chemistry of sea otters captured in Prince William Sound, Alaska following the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-17), U.S. Fish and Wildlife Service, Anchorage, Alaska.

Marine Mammal 6-18

Rotterman, L.M. and C. Monnett. 1991. Mortality of sea otter weanlings in eastern and western Prince William Sound, Alaska, during the winter of 1990-91, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-18), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-194998)

Marine Mammal 6-19

Udevitz, M.S., J.L. Bodkin, and D.P. Costa. 1995. Detection of sea otters in boat-based surveys of Prince William Sound, Alaska, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Marine Mammal Study Number 6-19), U.S. Fish and Wildlife Service, Anchorage, Alaska.

Restoration Study 11

Dragoo, D.E., G.V. Byrd, D.G. Roseneau, D.A. Dewhurst, J.A. Cooper, and J.H. McCarthy. 1995. Population levels and reproductive performance of murres based on observations at breeding colonies four years after the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Restoration Study Number 11), U.S. Fish and Wildlife Service, Alaska Maritime National Wildlife Refuge, Homer, Alaska. (NTIS No. PB96-204268)

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Restoration Study 15-2

Kuletz, K.J., N.L. Naslund, and D.K. Marks. 1994. Identification of marbled murrelet nesting habitat in the *Exxon Valdez* oil spill zone, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Restoration Study Number 15-2), U.S. Fish and Wildlife Service, Alaska Maritime National Wildlife Refuge, Anchorage, Alaska. (NTIS No. PB97-112718)

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Sharr, S., C.J. Peckham, D.G. Sharp, J.L. Smith, D.G. Evans, and B.G. Bue. 1995. Coded wire tag studies on Prince William Sound salmon, 1992, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Restoration Study 60A), Alaska Department of Fish and Game, Commercial

Fisheries Management and Development Division, Anchorage, Alaska. (NTIS No. PB96-196878)

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Highsmith, R.C., M.S. Stekol, P.G. van Tamelen, A.J. Hooten, L. Deysher, L. McDonald, D. Strickland, and W.P. Erickson. 1993. Herring Bay experimental and monitoring studies, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Restoration Study 102), Alaska Department of Fish and Game, Habitat and Restoration Division, Anchorage, Alaska. (NTIS No. PB96-194949)

Restoration Study 103-3

Farro, J.B., R.T. Bowyer, J.W. Testa, and L.K. Duffy. 1994. River otter component of the oiled mussel-bed study, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Restoration Study Number 103-3), Alaska Department of Fish and Game, Wildlife Conservation Division, Soldotna, Alaska.

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Corbett, D.G. and D. Reger. 1994. Development of Alaska heritage stewardship program for protection of cultural resources at increased risk due to the *Exxon Valdez* oil-spill, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Restoration Study Number 104A), U.S. Fish and Wildlife Service, Alaska Maritime National Wildlife Refuge, Homer, Alaska. (NTIS No. PB96-204284)

Restoration Study 105-1/93063

Willette, T.M., N.C. Dudiak, G. Honnald, G. Carpenter, and M. Dickson. 1995. Survey and evaluation of instream habitat and stock restoration techniques for wild pink and chum salmon, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Restoration Study Number 105-1, Restoration Project 93063), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Cordova, Alaska.

Restoration Study 106

McCarron, S. and A.G. Hoffman. 1993. Technical support study for the restoration of Dolly Varden and cutthroat trout populations in Prince William Sound, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Restoration Study 106), Alaska Department of Fish and Game, Division of Sport Fish, Anchorage, Alaska.

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O'Clair, C.E., J.W. Short, and S.D. Rice. 1996. Petroleum hydrocarbon-induced injury to subtidal marine sediment resources, *Exxon Valdez* Oil Spill State/Federal Natural Resource Damage Assessment Final Report (Subtidal Study Number 1A), National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Auke Bay Laboratory, Juneau, Alaska. (NTIS No. PB96-196944)

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Braddock, J.F., B.T. Rasley, T.R. Yeager, J.E. Lindstrom, and E.J. Brown. 1992. Hydrocarbon mineralization potentials and microbial populations in marine sediments following the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Subtidal Study Number 1B), University of Alaska Fairbanks, Fairbanks, Alaska. (NTIS No. PB96-194626)

Subtidal 2B/Air Water 2

Feder, H.M. 1995. Injury to deep benthos. *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report*, (Subtidal Study 2B/Air Water 2), Alaska Department of Fish and Game, Habitat and Restoration Division, Anchorage, Alaska. (NTIS No. PB96-194618)

Subtidal 3B

Sale, D.M., J.C. Gibeault and J.W. Short. 1995. Nearshore transport of hydrocarbons and sediments following the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Subtidal Study Number 3B), Alaska Department of Environmental Conservation, Juneau, Alaska. (NTIS No. PB96-194907)

Subtidal 4

Wolf, D.A. 1994. Fate and toxicity of spilled oil from the *Exxon Valdez*, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Subtidal Study Number 4), National Oceanic and Atmospheric Administration, Silver Spring, Maryland. (NTIS No. PB96-194857)

Subtidal 5

Trowbridge, Charles. 1992. Injury to Prince William Sound spot shrimp, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Subtidal Study Number 5), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Anchorage, Alaska.

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Subtidal 7

Varanasi, U., T.K. Collier, C.A. Krone, M.M. Krahn, L.L. Johnson, M.S. Myers, and S.-L. Chan. 1995. Assessment of oil spill impacts on fishery resources: measurement of hydrocarbons and their metabolites, and their effects, in important species, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Subtidal Study Number 7), National Marine Fisheries Service, NOAA, Seattle, Washington. (NTIS No. PB96-194741)

Terrestrial Mammal 3

Faro, J.B., R.T. Bowyer, J.W. Testa, and L.K. Duffy. 1994. Assessment of injury to river otters in Prince William Sound, Alaska, following the *Exxon Valdez* oil spill, *Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report* (Terrestrial Mammal Study Number 3), Alaska Department of Fish and Game, Wildlife Conservation Division, Soldotna, Alaska.

Restoration Projects

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93003

Sharr, S., J.E. Seeb, G.B. Bue, A. Craig, G.D. Miller. 1994. Injury to salmon eggs and preemergent fry in Prince William Sound, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93003), Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Cordova, Alaska.

93017

Miraglia, R.A. 1995. Subsistence Restoration Project, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93017), Alaska Department of Fish and Game, Division of Subsistence, Anchorage, Alaska.

93034

Sanger, G.A. and M.B. Cody. 1994. Survey of pigeon guillemot colonies in Prince William Sound, Alaska, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93034), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-194808)

93042/94092

Dahlheim, M.E. and C.O. Matkin. 1994. Assessment of injuries and recovery monitoring of Prince William Sound killer whales using photo-identification techniques, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93042/94092), U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Seattle, Washington. (NTIS No. PB96-194667)

93043-2

Bodkin, J.L. and M.S. Udevitz. 1996. 1993 Trial aerial survey of sea otters in Prince William Sound, Alaska, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93043-2), National Biological Service, Anchorage, Alaska.

93043-3

Udevitz, M.S., B.E. Ballachey, and D.L. Bruden. A population model for sea otters in western Prince William Sound, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93043-3), National Biological Service, Anchorage, Alaska.

93045

Agler, B.A., P.E. Seiser, S.J. Kendall, and D.B. Irons. 1994. Marine bird and sea otter population abundance of Prince William Sound, Alaska: trends following the *TV Exxon Valdez* oil spill, 1989-93, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93045), U.S. Fish and Wildlife Service, Anchorage, Alaska. (NTIS No. PB96-194873)

93047 (Subtidal Study 2A)

Jewett, S.C., and T.A. Dean, R.O. Smith, M. Stekoll, L.J. Halderson, D.R. Laur, and L. McDonald. 1995. The Effects of the *Exxon Valdez* oil spill on shallow subtidal communities in Prince William Sound, Alaska 1989-93; *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 93047, Subtidal Study Number 2A), Alaska Department of Fish and Game, Habitat and Restoration Division, Anchorage, Alaska. (NTIS No. PB96-194865)

93047-1

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93047-2

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
AD	Administrative Director's Office	ALL	No report required.		
ARC1	Archaeological Survey	ADNR	Final report available to public at OSPIC.	Reger, D.R., J.D. McMahon, and C.E. Holmes. 1992. Effect of crude oil contamination on some archaeological sites in the Gulf of Alaska, 1991 investigations. Four archaeological sites from which adequate collections and radiocarbon samples were obtained were sampled for sediments to test for presence of oil. Two sediment samples (Shuyak Island and Chenega Island) tested positive for oil. None of the sites yielded radiocarbon dates which appear to be significantly skewed from the expected age range. The results of the study show that reasonable dates can be obtained from the test sites despite presence of oil remains on the beach surface or in the case of two sites from within the cultural deposits. The results of the study are applicable to the sites studied and useful for management decisions based on broad general conclusions.	
AW1	Surface Oil Maps	ADEC	Project terminated. DEC/NOAA overflight charts stored in Alaska Archives.	DEC/NOAA overflight charts stored in Alaska Archives.	
B02	Boat Surveys	DOI	Final report available to public at OSPIC.	Klosiewski, S.P. and K.K. Laing. 1994. Marine bird populations of Prince William Sound, Alaska, before and after the Exxon Valdez oil spill. U.S. Fish and Wildlife Service, Anchorage. Populations of 9 species or species groups (black oystercatcher, pigeon guillemot, cormorants, harlequin duck, loons, scoters, newgull, arctic tern, northwestern crow) declined more than expected in the oiled zone of Prince William Sound suggesting an oil effect. Most injured species were ecologically tied to intertidal or nearshore areas.	Continued as 93045 and 94159.

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
B03	Murres Damage Assessment Closeout	DOI	Final report available to public at OSPIC.	Nysewander, D.R., C.H. Dippel, G.U. Byrd and E.P. Knudtson. 1993. Effects of the T/V Exxon Valdez oil spill on murres: A perspective from observations at breeding colonies. U.S. Fish and Wildlife Service. Homer. Numbers were reduced, nesting was delayed, and productivity rates were far below normal at major colonies within the spill trajectory. Reproductive success improved slightly in 1991.	Related to R11, 93022 and 94039.
B04	Eagles Damage Assessment Closeout	DOI	Final report available to public at OSPIC.	Bauman, T.D., P.F. Schempf, and J.A. Bernatowicz. 1994. Effects of the Exxon Valdez oil spill on bald eagles. U.S. Fish and Wildlife Service. Anchorage. Reproductive success of Prince William Sound bald eagles was significantly impaired in 1989, and nest failures were correlated with the distribution of crude oil on beaches. Although estimated direct mortality throughout the spill area was relatively large (about 300 - 900 eagles), no change in the population could be detected due to wide variation in population counts. The Prince William Sound eagle population was expected to return to its prespill level by 1993.	
B06	Marbled Murrelets Damage Assessment Closeout	DOI	Final report available to public at OSPIC.	Kuletz, K.J. 1994. Marbled murrelet abundance and breeding activity at Naked Island, Prince William Sound, and Kachemak Bay, Alaska, before and after the <i>Exxon Valdez</i> oil spill. U.S. Fish and Wildlife Service, Anchorage. The marbled murrelet population at a site within the path of the oil (Naked Island) was lower in 1989 than in prespill years, but returned to normal in 1990. Murrelet numbers in Kachemak Bay where oiling was minimal did not change following the spill.	Related to R15, 93051B and 94102.

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
B07	Storm Petrels Damage Assessment Closeout	DOI	Final report available to public at OSPIC.	Nishimoto, M. and G.U. Byrd. 1994. Effects of oil from the T/V <i>Exxon Valdez</i> spill on fork-tailed storm petrels breeding in the Barren Islands, Alaska. U.S. Fish and Wildlife Service. Homer. At the largest storm-petrel colony within the spill trajectory (Barren Islands), no evidence of adverse effects to breeding petrels was found. Burrow occupancy rates were above average, nesting chronology was not delayed, and productivity was normal.	
B08	Kittiwakes Damage Assessment Closeout	DOI	Draft report revised; resubmitted to Chief Scientist November 15, 1996.	Irons, D.B. 1994. Effects of the <i>Exxon Valdez</i> oil spill on black-legged kittiwake colonies in Prince William Sound, Alaska. U.S. Fish and Wildlife Service. Anchorage. The number of breeding pairs did not decline at colonies in the oiled area of Prince William Sound but reproductive success in 1989 was less than expected, apparently due to low hatching success. Reproductive success did not recover by 1992 but whether the decline was due to the spill is unknown.	TS1
B09	Pigeon Guillemots Damage Assessment Closeout	DOI	Final report available to public at OSPIC.	Oakley, K.L. and K.J. Kuletz. 1994. Population, reproduction and foraging of pigeon guillemots at Naked Island, Alaska, before and after the <i>Exxon Valdez</i> oil spill. U.S. Fish and Wildlife Service. Anchorage. The population at a major breeding site within the spill trajectory (Naked Island) declined by 50% compared to 1972-1973 levels. A long-term decline within Prince William Sound predated the spill and, therefore, the decline at naked Island could not be attributed totally to the spill. Reproduction was largely normal following the spill.	93034 and 94173

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
B11	Harlequin Ducks Damage Assessment Closeout	ADFG	Draft report peer reviewed; returned to PI for revision February 13, 1996.	New statistical analysis of bile results indicates elevated hydrocarbon concentrations in western Prince William Sound and Kodiak birds, but also in eastern Prince William Sound birds, compared to Juneau samples. Concentrations correlate positively with proximity to the spill origin.	Project conducted in conjunction with R71 and continued as 93033. Also related to B2, CH1B, TS1, R103, and 93036.
B12	Shorebirds Damage Assessment Closeout	DOI	The results of this project will be presented in two reports: (1) Final report on migrant shorebirds undergoing format review at OSPIC (2) Final report on black oystercatchers available to public at OSPIC.	(1) Martin, P.D. 1993. Effects of the <i>Exxon Valdez</i> oil spill on migrant shorebirds using rocky intertidal habitats of Prince William Sound, Alaska, during Spring 1989. U.S. Fish and Wildlife Service, Anchorage. (2) Andres, B.A. 1994. The effects of the <i>Exxon Valdez</i> oil spill on black oystercatchers breeding in Prince William Sound, Alaska. U.S. Fish and Wildlife Service. Anchorage. (1) Spring migrant shorebirds (surfbirds and black turnstones) escaped impacts because shorelines used by these species (particularly around Montague Island) were largely unoiled. (2) Black oystercatcher breeding was disrupted and hatching success reduced. Chicks raised on oiled beaches grew more slowly than chicks raised on unoiled beaches, perhaps due to ingestion of contaminated food.	Related to R17, R103 and 93035.

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
CH1A	Coastal Habitat Damage Assessment	USFS	Final report accepted by OSPIC; copies currently being made.	Highsmith, R.C., et al. Comprehensive assessment of coastal habitat. School of Fisheries and Ocean Sciences, UAF. Serious and long-term lasting effects on intertidal algae. Recovery occurring but slow to none in upper intertidal habitat. Full recovery expected. Intertidal invertebrates indicate negative effects from spill. Intertidal fish findings were inconclusive.	Continued as R102, 93039 and 94086.
CH1B	Hydrocarbons in Mussels	NOAA	Final report available to public at OSPIC.	Babcock, M. NOAA. Prespill and postspill concentrations of hydrocarbons in sediments and mussels in intertidal sites in PWS and the Gulf of Alaska. Exxon Valdez oil is located in several sites. Reductions in hydrocarbons are seen at several sites in PWS over 1989.	R103
FS01	Spawning Area Injury	ADFG	REPORT OVERDUE. Was to be submitted to Chief Scientist by August 15, 1995; then expected October 1, 1996; now delayed to February 1997. [Note: Report will present findings from both FS01 and R60B.]	Fried, S. and B. Bue Documented oil contamination of Prince William Sound pink salmon spawning area. Improved current and historic pink salmon escapement estimates which are necessary for accurate estimates of total wild returns. For preliminary results, see 1989, 1990 and 1991 NRDA Draft Status Reports.	Project conducted in conjunction with R60B.

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FS02	Pre-emergent Fry	ADFG	Final report available to public at OSPIC.	Sharr, S. B. Bue, et al. Injury to salmon eggs and pre-emergent fry in PWS. ADF&G. Measured higher embryo mortalities in oil-contaminated streams than in unoiled streams.	Project conducted in conjunction with R60C; continued as 93002 and 94191.
FS03	Coded-Wire Tags Damage Assessment	ADFG	Final report available to public at OSPIC.	Sharr, S., et al. Coded wire tag studies on PWS salmon, 1989-91. Unable to detect significant differences in survival to adults from fry emerging from oiled and control streams. Also unable to detect significant difference in survival of hatchery fish reared in oiled versus unoiled areas of Prince William Sound.	Project conducted in conjunction with R60A; continued as 93067, 93068, 94185, and 94320B.
FS04A	Early Marine Salmon Damage Assessment	ADFG	Final report available to public at OSPIC.	Willette, M., et al. Early marine salmon injury assessment in PWS. ADF&G Detected reduced growth and survival of fry rearing in oiled areas in 1989. No significant differences in growth and survival between oiled and nonoiled areas in subsequent years. Rate of adult returns to unoiled hatcheries twice that of oiled hatcheries in 1990.	Related to most projects in 94320 (PWS System Investigation). FS1, FS2, FS3, FS4A, and FS4B measured oil damages to specific life stages. FS28 incorporated their results into a model to estimate population level damages.

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FS04B	Juvenile Pinks	NOAA	Final report available to public at OSPIC.	Wertheimer, A.C., A.G. Celewycz, M.G. Carls, and M.V. Sturdevant. 1994. Impact of the oil spill on juvenile pink and chum salmon and their prey in critical nearshore habitats. NOAA, NMFS, Auke Bay Lab, Juneau, AK. Documented exposure and contamination of juvenile salmon in Prince William Sound. Contamination was associated with reduced growth. Ingestion of oil or oiled prey was route of contamination.	FS4A, AW3, and ST3A.
FS05	Dolly Varden Damage Assessment	ADFG	Final report available to public at OSPIC. Report includes data from R090.	Hepler, K.R., P. A. Hansen, D.R. Bernard. Impact of oil spilled from the <i>Exxon Valdez</i> on survival and growth of Dolly Varden and cutthroat trout in PWS, AK. ADF&G. Two populations of Dolly Varden and cutthroat trout emigrated from lakes into the wake of the spill. Growth from 1989-1990 was 24% and 22% slower for recaptured subadult and adult Dolly Varden and 36% to 43% slower for subadult and adult populations of cutthroat trout in populations associated with the oil. This difference persisted through 1991 for cutthroat trout but not for Dolly Varden. Chronic starvation and direct exposure to petrogenic hydrocarbons were hypothesized as effects leading to reduced growth and accelerated mortality of both Dolly Varden and cutthroat trout.	Combined with R90.

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FS11	Herring Injury	ADFG	The results of this project will be presented in 10 articles prepared for the Canadian Journal of Fisheries and Aquatic Science. In January 1997 it was decided that the articles will be peer reviewed by the Chief Scientist following their acceptance by the journal. All of the articles have been submitted to the journal and many have been accepted by the journal. The Chief Scientist is currently awaiting receipt of the accepted articles from the PI.	(1) Brown, et al. Introduction to the studies of EVOS. (2) McGurk, et al. Egg-larval mortality. (3) Hose, et al. Sublethal effects of EVOS on embryos and larvae: cytogenetics, etc. (4) Kocan, et al. Sensitivity of embryos to PBCO. (5) Norcross, et al. Distribution, abundance of larval herring in Prince William Sound. (6) Kocan, et al. Reproductive success of herring. (7) Brown and Debeves. Effects of EVOS on survival of herring. (8) Marty, et al. Histopathology and cytogenetics. (9) Brown, et al. Pacific herring in Prince William Sound after EVOS. (10) Okihiro, et al. Adult histopathology. Adult herring migrating to the spawning grounds in 1989 were exposed to oil. Exposure to oil continued throughout 1989 and into 1990. Internal tissues were damaged but the short- and long-term effects are speculative. There may have been a short-term effect which inhibited egg deposition and a long-term reproductive impairment (reduced survival of offspring). Eggs were deposited in oiled areas in 1989. Larvae hatched from exposed embryos suffered reduced survival.	Similar to 94166 (Herring Spawn Deposition). Also related to 94165 and 94320.
FS13	Effects of Hydrocarbons on Bivalves	ADFG	Draft report peer reviewed; returned to PI for revision September 26, 1996.		Clams are important prey for ducks, sea otters, river otters, and bears. This study is related to studies of these species and to 93017.

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FS27	Sockeye Salmon Overescapement	ADFG	Final report available to public at OSPIC.	Schmidt, D.C., T.E. Tarbox, B.M. Barrett, L.K. Brannian, S.R. Carlson, J.A. Edmundson, J.M. Edmundson, S.G. Honnold, B.E. King, G.B. Kyle, P.A. Roche, P. Shields, and C.O. Swanton. 1993. Sockeye salmon overescapement, <i>Exxon Valdez</i> Oil Spill State/Federal Natural Resource Damage Assessment Final Report, ADFG, Commercial Fisheries Management and Development Division, Soldotna, AK. Approximately ten to fifteenfold reduction in Kenai River smolt when compared to brood year 1987. Reduced smolt production from Akalura and Red Lakes, Kodiak Island. Reduced harvests for the Kenai are forecast for 1994 with returns below escapement levels possible for 1995 and 1996. Minimal harvests of Kenai River sockeye salmon are likely. Reduced harvests are forecast for Red and Akalura Lakes for 1994 through 1996.	Continued as 93002 and 94258. R53 acquired new information to facilitate management of anticipated reduced future runs. R113 examined potential for hatchery-reared fry in Red Lake, but forecasted returns make the project unfeasible.
FS28	Run Reconstruction	ADFG	Final report available to public at OSPIC.	Geiger, H., et al. Run reconstruction and life-history model. Estimated losses to adult populations from oil damages to early life stages at 2 to 3 million in 1990, and 40 to 70 thousand in 1991. Projected losses of 100 to 200 thousand adults in 1993 and 1994.	Through this project, results from FS1, FS2, FS3, FS4A and FS4B were incorporated into a model to estimate population level damage.

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FS30	Database Management	ADFG	Final report available to public at OSPIC.	DiCostanzo, C. and B.P. Simonson. 1993. Database management, <i>Exxon Valdez</i> Oil Spill Final Report, ADF&G, Division of Commercial Fisheries, Juneau, AK. Software was written to provide access to fish harvest database using the ADFG commercial fisheries Wide-Area Network (WAN). Procedures were implemented to provide reports in numerous database, spreadsheet, and statistical formats. Documentation and guidelines for using the harvest database were completed. WAN capability is now available between Juneau, Cordova, Anchorage, Kodiak, Soldotna, and Homer.	This database provides a repository for all NRDA and restoration projects information.
MM1	Humpback Whales Damage Assessment	NOAA	Final report available to public at OSPIC.	Dalheim, M. and O. von Ziegesar. 1993. Effects of the <i>Exxon Valdez</i> oil spill on the abundance and distribution of humpback whales (<i>megaptera novaeangliae</i>) in Prince William Sound. NMFS, Seattle, WA and North Gulf Oceanic Society, Homer, AK. In 1989, photographic analysis of PWS humpbacks revealed 59 whales identified in 119 encounters. In 1990, 66 whales were identified in 201 encounters. The number of humpbacks encountered per day was less in 1989 and 1990 than in 1988. Because of the difference in survey effort before and after the spill, it is difficult to determine whether there was a difference in the number of humpbacks using PWS. Regarding distribution of whales in PWS: In 1988 and 1990, more whales used the Lower Knight Island Passage than in 1989. Increased vessel and aircraft traffic and distribution of prey may have been contributing factors for the temporary redistribution of whales during 1989. Despite considerable research effort, only one PWS humpback was documented to move from PWS to southeastern Alaska during 1989.	

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MM2	Killer Whales Damage Assessment	NOAA	Final report available to public at OSPIC.	Dalheim, M. and C. Matkin. 1993. Assessment of injuries to killer whales in Prince William Sound, Kodiak Archipelago, and Southeast Alaska. National Marine Mammal Laboratory, Seattle, WA and North Gulf Oceanic Society, Homer, AK. In 1989, 8 resident (143 killer whales) and 4 transient pods (34 whales) were documented in 89 encounters. In 1990, 9 resident pods (148 whales) and 4 transient pods (30 whales) were identified in 80 encounters. During 1991, 7 resident pods (105 whales) and 2 transient pods (14 whales) were identified in 54 encounters. Despite increased effort over these 3 years, the number of encounters appears to be decreasing. The missing animals were not seen near Kodiak Island or southeast Alaska. Photographic analysis of resident pods revealed 14 animals missing from AB pod over the 1989-1991 period. The mortality rates for AB pod ranged from 3.1% in 1988 to 19.4% in 1989, 20.7% in 1990, 4.3% in 1991, and zero in 1992. Killer whale annual mortality rates are usually less than 2%.	

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MM6 (1of3)	Sea Otter Damage Assessment	DOI	The results of this project will be presented in 19 reports.-- 15 reports have been accepted by the Chief Scientist (14 are available to the public at OSPIC); 3 reports have been peer reviewed and returned to the PIs for revision; 1 report has been revised by the PI and resubmitted to the Chief Scientist.	(1) Ballachey, B.E. Biomarkers of damage to sea otters in PWS following potential exposure to oil spilled from the T/V <i>Exxon Valdez</i> . [Final report available to public at OSPIC.] (2) Ballachey, B.E. and D.M. Mulcahy. Hydrocarbon residues in tissues of sea otters (<i>Enhydra lutris</i>) collected from southeast Alaska. [Draft report peer reviewed; returned to PI for revision March 25, 1996; redraft expected January 31, 1997.] (3) Ballachey, B.E. and D. M. Mulcahy. Hydrocarbons in hair, livers and intestines of sea otters (<i>Enhydra lutris</i>) found dead along the path of the <i>Exxon Valdez</i> oil spill [Draft report peer reviewed; returned to PI for revision March 25, 1996; redraft expected January 31, 1997.] (4) Bodkin, J.L., D.M. Mulcahy and C. Lensink. Age-specific reproduction in female sea otters (<i>Enhydra lutris</i>) from southcentral Alaska: analysis of reproductive tracts. [Final report available to public at OSPIC.] (5) Bodkin, J.L. and M.S. Udevitz. An intersection model for estimating sea otter mortality from the <i>Exxon Valdez</i> oil spill along the Kenai Peninsula. [Final report available to public at OSPIC.]	Continued as 93043.

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MM6(2of3)	Sea Otter Damage Assessment	DOI	See MM6(1of3).	(6) Burn, D.M. Boat-based population surveys of sea otters (<i>Enhydra lutris</i>) in PWS in response to the <i>Exxon Valdez</i> oil spill. [Report accepted by Chief Scientist; not yet at OSPIC.] (7) DeGange, A.R., D.C. Douglas, D.H. Monson and C. Robbins. Surveys of sea otters in the Gulf of Alaska in response to the <i>Exxon Valdez</i> oil spill. [Final report available to public at OSPIC.] (8) Doroff, A.M. and J.L. Bodkin. Sea otter foraging behavior and hydrocarbon levels in prey following the <i>Exxon Valdez</i> oil spill in PWS, Alaska [Draft report revised by PI; resubmitted to Chief Scientist January 13, 1997.] (9) Doroff, A.M. and A.R. DeGange. Experiments to determine drift patterns and rates of recovery of sea otter carcasses following the <i>Exxon Valdez</i> oil spill. [Final report available to public at OSPIC.] (10) Lipscomb, T.P., R.K. Harris, R.B. Moeller, J.M. Fletcher, R.J. Haebler and B.E. Ballachey. Histopathologic lesions associated with crude oil exposure in sea otters. [Final report available to public at OSPIC.] (11) Lipscomb, T.P., R.K. Harris, A.H. Rebar, B.E. Ballachey and R.J. Haebler. Pathological studies of sea otters. [Final report available to public at OSPIC.] (12) Monnett, C. and L.M. Rotterman. Movements of weanling and adult female sea otters in PWS after the <i>Exxon Valdez</i> oil spill. [Final report available to public at OSPIC.]	

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MM6(3of3)	Sea Otter Damage Assessment	DOI	See MM6(1of3).	(13) Monnett, C. and L.M. Rotterman. Mortality and reproduction of female sea otters in PWS. [Final report available to public at OSPIC.] (14) Monnett, C. and L.M. Rotterman. Mortality and reproduction of sea otters oiled and treated as a result of EVOS. [Final report available to public at OSPIC.] (15) Monson, D.H. and B.E. Ballachey. Age distributions and sex ratios of sea otters found dead in PWS following the <i>Exxon Valdez</i> oil spill. [Final report available to public at OSPIC.] (16) Mulcahy, D.M. and B.E. Ballachey. Hydrocarbon residues in tissues of sea otters (<i>Enhydra lutris</i>) collected following the <i>Exxon Valdez</i> oil spill. [Draft report peer reviewed; returned to PI for revision March 25, 1996; redraft expected January 31, 1997.] (17) Rebar, A.H., B.E. Ballachey, D.L. Bruden and K.A. Kloecker. Hematology and clinical chemistry of sea otters captured in PWS following the <i>Exxon Valdez</i> oil spill. [Final report available to public at OSPIC.] (18) Rotterman, L.M. and C. Monnett. Mortality of sea otter weanlings in eastern and western PWS during the winter of 1990-91. [Final report available to public at OSPIC.] (19) Udevitz, M.S., J.L. Bodkin and D.P. Costa. Detection of sea otters in boat based surveys in PWS. [Final report available to public at OSPIC.]	

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R011	Murre Recovery Monitoring	DOI	Final report available to public at OSPIC.	Dragoo, D.E., G.V. Byrd, D.G. Roseneau, D.A. Dewhurst, J.A. Cooper, and J.H. McCarthy. 1994. Population levels and reproductive performance of murre based on observations at breeding colonies four years after the T/V <i>Exxon Valdez</i> oil spill. U.S. Fish and Wildlife Service. Homer Numbers of murre breeding at major colonies within the trajectory remained lower in 1992. Breeding chronology was delayed. Productivity at the Barren Islands was higher than in other postspill years, but still lower than normal. Productivity at Puale Bay was normal.	Continued as 93022 and 94039. Also related to B3.
R015	Marbled Murrelet Restoration Study	DOI	The results of this project will be presented in two reports: (1) Final report available to public at OSPIC. (2) Final report available to public at OSPIC.	(1) Kuletz, K.J., D.K. Marks, and N.L. Naslund. 1994. At-sea abundance and distribution of marbled murrelets in the Naked Island area, Prince William Sound, Alaska, in Summer, 1991 and 1992. U.S. Fish and Wildlife Service, Anchorage (2) Kuletz, K.J., N.L. Naslund, and S.K. Marks. 1994. Identification of marbled murrelet nesting habitat in the <i>Exxon Valdez</i> oil spill zone. U.S. Fish and Wildlife Service, Anchorage. Using ground search techniques, 10 tree nests were found on Naked Island in 1991 and 1992. Nest trees were in stands of high volume and size class trees, and upland activity of murrelets throughout Prince William Sound was highest in such stands.	Continued as part of 93051 and 94505 (closeout).

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R047	Stream Habitat Assessment	ADFG	Final report available to public at OSPIC.	Kuwada, M. and K. Sundet. 1993. Stream Habitat Assessment Project: Afognak Island. ADF&G. About 250 km of shoreline and 260 km² of uplands were surveyed for anadromous fish streams on private lands on Afognak Island, resulting in discovery of 167 anadromous streams totaling about 56 km. Stream habitat parameters and upper extents of anadromous distribution were documented, and streams were mapped by GPS.	Continued as part of 93051 and 94505 (closeout). Supported evaluation of land for habitat protection.
R053	Kenai River Sockeye Salmon Restoration	ADFG	Final report available to public at OSPIC.	Tarbox, K., et al. Kenai River sockeye salmon restoration. Successful collection of baseline and fishery samples for genetic stock identification. Unsuccessful in choosing new adult in-river hydroacoustic equipment. Successful hydroacoustic enumeration of returning adult salmon in Upper Cook Inlet.	R59 analyzed genetic samples collected by this project.
R059	Genetic Stock Identification	ADFG	Annual report peer reviewed; available to public at OSPIC.	Seeb, J. and L. Seeb. Assessment of genetic stock structure of salmonids. ADF&G. June 1993. Genetic data were collected during 1992 from spawning populations contributing to mixed-stock harvests of sockeye salmon in Cook Inlet. These data can be used to estimate the presence of Kenai River stocks in mixed-stock areas of Upper Cook Inlet.	R53 collected spawning samples.

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R060A/B	Prince William Sound Pink Salmon	ADFG	R060A: Final report available to public at OSPIC. R060B: Findings will be presented in report being prepared under Project FS01.	R060A: Sharr, S., et al. Coded wire tag studies on PWS salmon, 1992. R060B: See FS01. R060A: The CWT program helped reduce the commercial harvest on damaged pink salmon populations by providing fishery managers with timely inseason fishery stock composition estimates. R060B: The escapement project provided improved pink salmon escapement information which was essential for the precise fisheries management required to protect damaged wild stocks.	Continued as 93067, 94184 (report preparation) and 94320B. Also related to R60C, which monitors and investigates mechanisms for oil damage to early life stages of pink salmon populations.
R060C	Pink Salmon Egg/Fry	ADFG, NOAA	The results of this project will be presented in two reports: (1) ADFG report available to public to OSPIC. (2) NOAA findings included in annual report prepared under 94191. See 94191 for status.	(1) Sharr, Samuel and C. Peckham. 1994. Coded wire tag studies on Prince William Sound salmon, 1992. ADFG (2) See 94191. (1) Persistence of elevated mortalities among embryos in oiled streams versus those in unoled streams suggests genetic damage. (2) Oil exposures completed for 1992 and 1993 brood years. All 1992 brood pinks died from bacterial kidney disease by June 1994. Spawning of 1993 brood expected in September 1995, with survival of progeny to be determined in early 1996.	Continued as 93003 and 94191. Other related projects include B11, CH1B, R60AB, R103, and 93036.

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R071	Harlequin Duck Restoration and Monitoring	ADFG	Draft final report submitted to Chief Scientist April 15, 1996.	Rothe, T. Breeding ecology of harlequin ducks in PWS, Alaska. ADF&G. Crowley, D.W. 1993. Breeding habitat of harlequin ducks in PWS, AK. MS Thesis. Oregon State University, Corvallis, OR. Comparative harlequin data in eastern Prince William Sound for B11. 1991-1992 harlequin production in eastern Prince William Sound similar to prespill. Techniques devised to capture and track harlequins. Breeding stream parameters and nest sites described. Additional oiled mussel beds identified. Description and analysis of harlequin breeding stream habitat in eastern PWS produced in an M.S. thesis, Oregon State University (Crowley 1994).	B11 corroborated harlequin status in Prince William Sound. R103 documented continued oiled prey. B2 corroborates harlequin status in PWS.
R073	Harbor Seals	ADFG	Final report available to public at OSPIC.	Frost, K.J. and L.F. Lowry. 1994. Assessment of injury to harbor seals in PWS and adjacent areas following EVOS. ADF&G, Wildlife Conservation Division, Fairbanks, AK. Harbor seals continued to use heavily oiled haulouts even when unoiled sites were available nearby. They were observed to give birth and care for their pups on these sites. The pelage of both pups and adults became oiled when they used these sites or contacted oil in the water. However, the pelage became cleaner with time if they did not continue to use oiled sites. Many carcasses recovered were either stillborn or died shortly after birth. Observations suggest that stress and/or toxic effects of oil resulted in abortions, premature births, and increased mortalities in heavily oiled areas. Four book chapters prepared and in press detailing results of MM5 study.	Started in 1989 as MM5. Continued as 93046 and 94064.

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R090	Dolly Varden Char Monitoring	ADFG	Report being prepared under Project FS05.	See FS05. Two populations of Dolly Varden and cutthroat trout emigrated from lakes into the wake of the spill. Growth from 1989-1990 was 24% and 22% slower for recaptured subadult and adult Dolly Varden and 36% to 43% slower for subadult and adult populations of cutthroat trout in populations associated with the oil. This difference persisted through 1991 for cutthroat trout but not for Dolly Varden. Chronic starvation and direct exposure to petrogenic hydrocarbons were hypothesized as effects leading to reduced growth and accelerated mortality of both Dolly Varden and cutthroat trout.	Project combined with FS05. R90 and R106 provide information on populations of Dolly Varden and cutthroat trout for 94320 (Ecosystem Study Plan).
R092	GIS Mapping and Analysis: Restoration	ADNR	No report required.	Provided mapping and database support for restoration projects. Developed timber harvest database and land status and parcel maps for imminent threat parcels. Contributed to a 3-volume data dictionary produced for the Trustee Council by the Nature Conservancy.	Supported numerous restoration projects.

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R102	Herring Bay Experimental and Monitoring Study	ADFG	Final report available to public at OSPIC.	Highsmith, R.C.; M.S/ Stekoll, A.J.Hooten, P. van Tamelen, L. Deysher, L. McDonald, D. Strickland and W.P. Erickson. 1993. Herring Bay experimental and monitoring studies. School of Fisheries and Ocean Sciences, UAF. Cover of the dominant intertidal alga, <i>Fucus gardneri</i> , was reduced at oiled/cleaned sites. <i>Fucus</i> recruitment was poor in the mid- to upper intertidal, probably due to lack of shelter from desiccation and heating by adult plants. Limpet densities continued to be lower in the upper intertidal. Recovery appeared to be occurring in the lower intertidal zone in 1990-1991 and in the upper intertidal in 1993. Results have been incorporated into an interaction web to elucidate potential oil spill effects on community dynamics.	Continued as 93039 and 94086.

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R103	Oiled Mussels	ADFG, NOAA, DOI	The results of this project will be presented in four reports: (1) NOAA annual report peer reviewed; available to public at OSPIC. (2) DOI/FWS findings being incorporated into report on 93035. (3) ADFG final report available to public at OSPIC. (4) DOI/NPS final report accepted by Chief Scientist. Not yet at OSPIC.	(1) Babcock, M., P.M.Rounds, C. Brodersen and S. Rice. 1993. Recovery monitoring and restoration of intertidal oiled mussel beds in Prince William Sound impacted by the <i>Exxon Valdez</i> oil spill. NOAA, NMFS, Auke Bay Laboratory, Juneau, Alaska. (2) See 93035. (3) Faro, J.B., R.T. Bowyer, et al. 1994. River otter component of the oiled mussel bed study. (4) Irvine, G. 1993 Geographic extent and recovery monitoring of intertidal oil in mussel beds in Gulf of Alaska effected by the <i>Exxon Valdez</i> oil spill. (1) Identified 27 mussel beds within PWS with total petroleum hydrocarbons greater than 10,000 mg/g wet weight. Site manipulation was conducted at three heavily oiled mussel beds. (2) Black oystercatcher chicks raised on oiled sites grew more slowly than chicks raised on unoiled sites. (3) Differences in levels of blood haptoglobin and Interleukin-6 ir, previously found to be elevated in river otters inhabiting oiled compared to nonoiled areas in PWS, were not observed in summer 1992. River otters from oiled areas continued to regain body size from levels noted in 1990. Suggests that river otters may be recovering from chronic effects that were observed in 1990 and 1991.	Continued as 93036, 94090, and 95090.
R104A	Site Stewardship	DOI	Final report available to public at OSPIC.	Corbett, D.G. 1994. Development of the Alaska Heritage Stewardship Program for protection of cultural resources at increased risk due to the <i>Exxon Valdez</i> oil spill. U.S. Fish and Wildlife Service, Anchorage, AK. Increased public knowledge of archaeological sites following the spill led to increased vandalism. A stewardship program to train local residents to protect cultural resources was developed.	93006, 94007

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1992 Work Plan

Quarter Ending December 31, 1996

<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
R105	Instream Survey Restoration Implementation Planning	ADFG, USFS	The results of this project will be presented in two reports (report writing funded under 93063): (1) Final report available to public at OSPIC. (2) USFS report accepted by Chief Scientist. Not yet at OSPIC.	(1) Willette, M. Survey and evaluation of instream habitat and stock restoration techniques for wild pink and chum salmon. (2) Weidemeyer, K. Survey and evaluation of instream habitat and stock restoration techniques for anadromous fish. A number of sites were reviewed, evaluated, and ranked for possible instream restoration efforts. A number of efforts have subsequently been implemented.	Continued as 93063.
R106	Dolly Varden Restoration	ADFG	Final report available to public at OSPIC.	McCarron, S. and A.G. Hoffman, 1993. Technical support study for the restoration of Dolly Varden and cutthroat trout populations in PWS. ADF&G, Division of Sport Fish, Anchorage, AK. The nature and extent of injury to Dolly Varden and cutthroat trout was documented in FS5. The goal of R106 was to provide information for developing a management plan to protect impacted stocks, while allowing for continued recreational fishing for sport anglers where stocks could support fisheries. Sixty-one streams were surveyed to provide this information.	FS5 and 94139.

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R113	Red Lake Sockeye Salmon Restoration	ADFG	Project canceled based on findings of FS27.	Red Lake does not need restoration effort. This project was funded in anticipation of poorer returns of sockeye salmon to Red Lake than actually occurred.	Related to FS27. NEPA compliance for Red Lake restoration project was funded through 93030, which was canceled when the project was dropped.
RT	Restoration Team	ALL	No report required.		
ST1A	Subtidal Sediments	NOAA	Final report available to public at OSPIC.	O'Clair, et al. NOAA. Petroleum hydrocarbon induced injury to subtidal sediment resources. Subtidal sediments have been found to be contaminated at no fewer than 15 sites within Prince William Sound by June 1990. Contamination had reached at least 20 meters at some sites. Evidence of hydrocarbon movement downslope into subtidal sediments was detected by 1991.	Continued as 93047 and 94285. Other related projects include ST1B.

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ST1B	Subtidal Microbial	ADEC	Final report available to public at OSPIC.	Braddock, Joan F., B. Rasley, T. Yeager, J. Lindstrom, D. Brown. Hydrocarbon mineralization potentials and microbial populations in marine sediments following the <i>Exxon Valdez</i> oil spill. DEC The numbers and activity of oil-degrading microorganisms were measured in sediments periodically for two years after the oil spill. Populations of oil-degrading microorganisms were significantly higher in sediments collected at oiled sites relative to reference sites. This information is useful in establishing the extent of contamination of the oil with time and also provides evidence that biodegradation is occurring naturally in Prince William Sound.	93047
ST2A	Shallow Benthic	ADFG	No report required. (Data/findings incorporated into report on 93047.)	See 93047. At oiled sites there was a decrease in some subtidal organisms relative to unoiled sites. Partial recovery observed in 1991.	Continued as 93047 and 94285. Other related projects include B11, CH1A, R103, and TM3.
ST2B	Deep Water Benthic	ADFG	Final report available to public at OSPIC.	Feder, H. 1995. Injury to deep benthos. ADFG No indication of oil-related damage to deep benthic environment. No oil fractions appear related to unusual benthic faunal composition. Differences between stations within and outside of oil trajectory were mainly related to sediment differences. No oil effects demonstrated.	CH1A, ST1B, ST2A, ST4, ST5, ST6, ST7, ST8, and TS1.

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ST3A	Caged Mussels Damage Assessment	NOAA	The results of this project will be presented in two reports: (1) Final report available to public at OSPIC. (2) Final report available to public at OSPIC.	(1) Petroleum hydrocarbons in near surface seawater of PWS: chemical sampling and analysis. (2) Petroleum hydrocarbons in near surface seawater of PWS: analysis of caged mussels. Mussels transplanted along spill trajectory accumulated particulated oil at concentrations that decreased with depth, elapsed time, and distance from heavily oiled beaches. In 1990 and 1991, low concentrations of polynuclear aromatic hydrocarbons were sporadically detected at locations adjacent to heavily oiled beaches. Petroleum hydrocarbons were detected only sporadically in mussels deployed in locations outside Prince William Sound in 1989.	AW3, ST3B
ST3B	Sediment Traps Damage Assessment	ADEC	Final report available to public at OSPIC.	Sale, David M., J. Gibeaut, J. Short. Nearshore subtidal transport of hydrocarbons and sediments following the Exxon Valdez oil spill. ADEC The subtidal sediment trap study demonstrated that oiled particulate matter derived from oil-impacted beaches in Prince William Sound contaminated adjacent subtidal sediments. The study further showed that the transfer rate of oil from beach to subtidal sediment was highest the year following the spill, and declined steadily thereafter.	ST3A and ST4

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ST4	Fate and Toxicity Damage Assessment	NOAA	Final report available to public at OSPIC.	Fate and toxicity of spilled oil from the <i>Exxon Valdez</i>. 1994. Results indicate that some toxicity was still associated in 1990 and 1991 with sediments from lower intertidal zones of heavily oiled sites. The fate of <i>Exxon Valdez</i> oil will include transformation of most constituents (through biodegradation and photooxidation) mainly into carbon dioxide and water, although some constituents may persist indefinitely.	AW4, ST1, ST2, ST3A, ST3B, ST7, TS1 and response studies.
ST5	Shrimp	ADFG	Final report available to public at OSPIC.	Trowbridge, C. 1992. Injury to Prince William Sound spot shrimp. ADF&G, Commercial Fisheries Management and Development Division, Anchorage, AK. Hydrocarbon analyses did not detect oil contamination with sampled spot shrimp. Shrimp collected in unoiled areas had more inflammatory gill lesions than did shrimp from the oiled area. These results indicate that oil contamination had little or no effect on spot shrimp.	
ST6	Rockfish Damage Assessment	ADFG	Final report available to public at OSPIC.	Hoffman, A. Injury to demersal rockfish and shallow reef habitats in PWS, 1989-91. Oil was determined to be the cause of death for a small number of demersal rockfish in Prince William Sound. Dead and dying rockfish were reported from the spill area. Of the five fish that were fresh enough to be necropsied, exposure to crude oil was found to be the cause of death. These results prompted additional testing for hydrocarbons in live fish. These tests showed at least 11 of 36 rockfish tested from oiled sites had been exposed to oil within 2 weeks prior to testing. None of the 13 fish from unoiled sites were exposed to oil. Subsequent studies showed some indications of sublethal injuries to rockfish from exposure to oil.	ST2A and ST2B

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ST7	Demersal Fishes Damage Assessment	NOAA	Final report available to public at OSPIC.	Collier, T. Assessment of oil spill impacts on fishery resources: measurement of hydrocarbons and their metabolites, and their effects, in important species. NOAA Results show continuing exposure of several benthic fish species and pollock, suggesting continuing petroleum contamination of subtidal sediments, water and food in 1990 and 1991 at sites up to 400 miles from the spill origin.	ST1A
ST8	Sediment Data Synthesis	NOAA	Draft final report submitted to Chief Scientist November 25, 1996; under peer review. Report includes electronic hydrocarbon database with a user manual; a manuscript submitted for publication in the Journal of Environmental Science and Technology; and descriptive documentation.	Short, J. Mussel tissue and sediment hydrocarbon data synthesis, 1989-1995. NOAA. Analyzed several thousand environmental samples, provided numerical correlations directly related to oil, and assessed associations of observed biological effects with concentrations of <i>Exxon Valdez</i> oil.	TS1, TS3, and 93053.
TM3	River Otter and Mink Damage Assessment in Prince William Sound	ADFG	Final report available to public at OSPIC.	Faro, J.B., R.T. Bowyer, J.W. Testa, and L.K. Duffy. Assessment of injury to river otters in PWS, AK following the <i>Exxon Valdez</i> oil spill. ADF&G The results indicate that differences in home range, habitat selection, and latrine site abandonment, as well as changes in food habits, occurred in river otters.	CH1B and R103

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TS1	Hydrocarbon Analysis	NOAA	Report being prepared under ST8.	See ST8. Coordinated the chemical analysis of all samples collected by damage assessment studies to develop a single set of analytical data comparable across projects.	ST8, TS3, and B08.
TS3	GIS Mapping and Analysis: Damage Assessment	ADNR	No report required.	Provided mapping and database support for damage assessment projects.	Supported numerous damage assessment projects, including FS 4, FS13, CH1A and R47.

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93002	Sockeye Salmon Overescapement	ADFG	Annual report (funded under 94258) peer reviewed; available to public at OSPIC.	Schmidt, D., et al. Sockeye salmon overescapement. Red Lake 1994 plankton indicate downward trend associated with increased sockeye salmon fry recruitment. May suggest increased smolt production in 1995 likely. Akalura Lake failed to meet escapement goals. Adult return to Red Lake accurately forecasted by smolt program. Kenai River adult return forecast with large bounds because of uncertainty of smolt production in 1990.	Project is continuation of FS27, 93002. Continued as 94258.
93003	Salmon Egg to Pre-emergent Fry Survival	ADFG NOAA	The results of this project will be presented in two reports (funded under 94191): (1) ADFG report available to public at OSPIC. (2) NOAA results included in report prepared under 94191. See 94191 for status.	(1) Sharr, S. and J.E. Seeb. 1994. Injury to salmon eggs and preemergent fry in Prince William Sound. (2) See 94191. Oil exposures completed for 1992 and 1993 brood years. 1992 brood pink salmon died from bacterial kidney disease; spawning not possible. Precautions to ensure survival of 1993 brood have been taken. Persistence of elevated embryo mortalities in oiled streams in 1992 indicate possible genetic damage to wild pink salmon populations from the <i>Exxon Valdez</i> oil spill. Preliminary laboratory studies support the genetic hypothesis. Additional laboratory studies demonstrate dose response of pink salmon embryos when incubated in gravel exposed to crude oil from the <i>Exxon Valdez</i> .	Started in 1989 as FS2 and continued as R60C and 94191.

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93006	Site Specific Archaeological Restoration	DOI/ NPS	REPORT (funded under 94007) OVERDUE.	Birkedahl, T., et al. 1993. Archaeological site monitoring and restoration. Archaeological restoration assessments conducted at 14 sites in 1993 suggest that a majority of the archaeological vandalism that can either be directly or indirectly linked to the <i>Exxon Valdez</i> oil spill event occurred in 1989 before adequate constraints were put into place over the activities of oil spill clean-up personnel. Most vandalism took the form of "prospecting" for high yield sites. In 1993, only two of the 14 sites visited showed signs of continued vandalism and the link between this recent vandalism and the <i>Exxon Valdez</i> oil spill event remains highly problematical. Oil monitoring samples from the archaeological sites have not been processed as of this date, but oil was still visible to the naked eye in the intertidal zones of two of the 14 sites visited.	Continued as 94007.
93012	Genetic Stock Identification of Kenai River Sockeye Salmon	ADFG	Draft final report (which also contains results of genetics component of 94255) submitted to Chief Scientist May 3, 1996; under peer review.	Genetic data were collected during 1992 and 1993 from spawning populations contributing to mixed-stock harvest of sockeye salmon in Cook Inlet. These data were used in a pilot study to estimate the component of Kenai River stocks harvested in mixed-stock areas of Upper Cook Inlet.	Began as R52. Continued as 94504. Spawning samples collected under 93015.

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93015	Kenai River Sockeye Salmon Restoration	ADFG	Annual report peer reviewed; available to public at OSPIC	Tarbox, K., et al. Kenai River sockeye salmon restoration. Successful collection of baseline and fishery genetic samples. Successful in-season hydroacoustic survey of Upper Cook Inlet by subcontractor.	Began as R52 and continued as 94255. Genetic samples analyzed under 93012.
93016	Chenega Bay Chinook and Silver Salmon (NEPA Compliance)	ADFG	No report required (NEPA compliance only).		Continued as 94272. Also related to 93017.
93017	Subsistence Food Safety Survey and Testing	ADFG	Final report available to public at OSPIC.	Miraglia, R.A. 1995. Subsistence restoration project. ADF&G, Division of Subsistence, Anchorage, AK. First round of tests for hydrocarbon contamination of subsistence resources showed little or no contamination. Results of second round of testing are pending. The observations of abnormalities in the tested resources caused a shift in concerns of subsistence users from oil contamination to what effects these abnormalities have on these resources. A series of public meetings were held in communities to locate sites and species of concern.	Continued as 94279.
93024	Restoration of Coghill Lake Sockeye Salmon Stock	ADFG	Redraft of final report submitted to Chief Scientist May 21, 1996; under peer review.	Monitoring showed the need for modifying both the type and concentrations of fertilizer.	Continued as 94259 and 95259.
93032	Cold Creek Pink Salmon Restoration (NEPA Compliance)	ADFG	Project canceled.		R105

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93033	Harlequin Duck Restoration	ADFG	The results of this project will be presented in two reports (funded under 94066): (1) Report on Afognak habitat assessment and PWS production survey peer reviewed and returned to PI November 14, 1995. (2) REPORT OVERDUE. Analyses of blood and physiological samples from 1993 collections not completed by UC-Davis) not received. This contract work is delinquent.	(1) Restoration monitoring of harlequin ducks in PWS and Afognak Island. Only 3 harlequin broods observed in western Prince William Sound; 14 in eastern Prince William Sound. Decreased numbers of harlequins molting in western Prince William Sound in July. Suspect incomplete gonadal development in pre-nesting western Prince William Sound harlequins. Blood/physiological analysis and hydrocarbon analyses in process. Harlequin breeding stream/nest site model in preparation. Harlequin breeding assessment completed on North Afognak Island.	Started in 1989 as B11 and continued as R71. 94427 and 96427 continue harlequin brood surveys.
93034	Pigeon Guillemot Recovery	DOI	Report (funded under 94506) available to public at OSPIC.	Sanger, G.A. and M.B. Cody. 1994. Survey of pigeon guillemot colonies in Prince William Sound, Alaska. U.S. Fish and Wildlife Service, Anchorage. One hundred eighty-four colonies, concentrated in southwest Prince William Sound and at Naked Island, were identified. This colony survey confirmed that the present population of pigeon guillemots in Prince William Sound is 3,000 - 4,900.	Continued as 94173.

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93035	Black Oystercatchers / Oiled Mussel Beds	DOI	Revised draft resubmitted to Chief Scientist October 28, 1996; under peer review. Report also includes findings from R103.	Andres, B. 1993. Potential impacts of oiled mussel beds on higher organisms: black oystercatchers. US Fish and Wildlife Service, Anchorage, AK. Growth rates of oystercatcher chicks were lower on oiled than unoiled nest sites. Some aliphatic compounds were detected in 1992 fecal samples from oiled sites. Breeding pairs increased on oiled Green Island from 1992 to 1993 but decreased on Knight Island from 1991 to 1993.	Continued as 94020.
93036	Oiled Mussel Beds	DOI, NOAA	The results of this project will be presented in two reports: (1) DOI results will be included in report being prepared under 95090; see 95090 for status. (2) Annual report peer reviewed; available to public at OSPIC.	(1) See 95090. (2) Babcock, M. Recovery monitoring and restoration of oiled mussel beds in PWS, Alaska. In 1992 and 1993, mussels and sediments from 70 mussel beds in PWS were sampled. Sediments collected from 31 of the oiled beds had total petroleum hydrocarbon concentrations greater than 10,000 ng/g wet weight. The highest concentrations were in sediments collected from Foul Bay (62,258 +/- 1,272 ng/g total polynuclear hydrocarbons). Minimally intrusive site manipulation was conducted at three heavily oiled mussel beds. Preliminary evaluations indicate these methods were not effective in reducing petroleum hydrocarbons adjacent to manipulated areas. Along the Kenai and Alaska Peninsulas, 15 mussel beds were sampled--four of which were new sites--and four of these beds showed total petroleum hydrocarbons in excess of 5,000 ng/g wet weight.	Continued as 94090.

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93038	Shoreline Assessment	ADEC	REPORT OVERDUE. Draft report peer reviewed; returned to PI for revision January 26, 1996.	Piper, E., et al. 1993 shoreline assessment.	
				Surface oil has become stable. Subsurface oil has decreased substantially since 1991. Oiling is discontinuous throughout the study site.	
93039	Herring Bay Experimental and Monitoring	ADFG	Results will be presented in report being prepared under 95086; see 95086 for status.	Examination of dominant intertidal alga, <i>fucus gardneri</i> , has shown that larger plants were removed from intertidal in areas affected by spill/clean-up. Where <i>fucus</i> cover was reduced, abundance of ephemeral algae often increased. Populations of grazing invertebrates, e.g., limpets and periwinkles, showed reduced densities at oiled sites in upper intertidal. Initially, barnacle recruitment was lower in quadrats on tar-covered rocks than clean quadrats, but differences disappeared at most sites over time. <i>Fucus</i> germlings and filamentous algae continued to have lower densities and percent cover on oiled than non-oiled substrates. Recovery occurring in lower/middle intertidal zones and normal community interactions returning. Upper intertidal continues to exhibit damage; recovery may take additional 2-5 years.	Evolved from CH1A and R102 and continued as 94086.
93041	Comprehensive Monitoring	NOAA	Project discontinued.		

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93042	Killer Whale Recovery	NOAA	Final report available to public at OSPIC.	Dalheim, M.E. 1994. Assessment of injuries and recovery monitoring of Prince William Sound killer whales using photo-identification techniques. National Marine Mammal Laboratory, Seattle, WA. Photographic analysis of resident pods revealed 14 animals missing from AB pod over the period 1989-1991. Despite considerable searching effort in PWS and Southeast Alaska, the missing whales have not been observed. Given the stability of resident pods, it is assumed the missing whales are dead. The mortality rates for AB pod ranged from 3.1% in 1988 to 19.4% in 1989, 20.7% in 1990, and 4.3% in 1991. Zero mortality occurred in 1992 and 1993. The adult annual mortality rate of killer whales is usually less than 2%. Annual pod mortality rates on the order of 20% are unprecedented for North Pacific killer whales.	Close-out/report writing funded under 94092.

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93043	Sea Otter Demographics and Habitat	DOI (NBS)	The results of this project will be presented in three reports (funded under 94246): (1) Data on recovery of sea otter carcasses being presented in MM6 (#15). (2) Final report available to public at OSPIC. (3) Final report on sea otter demographics available to public at OSPIC.	(1) See MM6(#15). (2) Bodkin, J.L. and M.S. Udevitz. 1993 trial aerial survey of sea otters in PWS, Alaska. 1994. NBS, Anchorage, AK. (3) Udevitz, M.S., B.E. Ballachey, and D. L. Bruden. 1995. A population model for sea otters in western PWS. USNBS. Anchorage, AK. Aerial survey of sea otters in Prince William Sound completed summer 1993; estimated abundance is approximately 18,000. Age distribution of sea otter carcasses recovered in spring 1993 in western Prince William Sound is similar to prespill distribution. Age- and sex-specific survival rates generated from carcass data for sea otters in Prince William Sound.	Report writing funded under 94246.
93045	Marine Bird / Sea Otter Surveys	DOI	Final report available to public at OSPIC.	Agler, B.A., P.E. Seiser, S.J. Kindall and D.B. Irons. 1994. Marine bird and sea otter populations in Prince William Sound, Alaska: Population trends following the <i>Exxon Valdez</i> oil spill. U.S. Fish and Wildlife Service, Anchorage. Overall marine bird population estimates in Prince William Sound have not changed significantly since 1989, but were 41% lower than 1972-1973 estimates. Rates of increase of goldeneyes and surfbird populations were higher in the unoiled zone of Prince William Sound than in the oiled zone, whereas oystercatchers increased more rapidly in the oiled zone.	Started as part of B2 and continued as 94159.

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93046	Habitat Use, Behavior, and Monitoring of Harbor Seals in PWS	ADFG	Final report (funded under 94064) available to public at OSPIC.	Frost, K.J. and L.F. Lowry. 1994. Habitat use, behavior, and monitoring of harbor seals in Prince William Sound, Alaska. ADFG Counts of seals at 25 trend sites in Prince William Sound were similar during pupping and molting in 1992 and 1993. However, 1993 pupping counts were 23% lower than in 1989. Molting counts were similar to 1989 postspill counts, but 27% lower than 1988 counts. Sixteen seals satellite-tagged since 1992 indicate that seals in central Prince William Sound haul out and feed near the same sites with little movement to other areas. Feeding usually occurs in depths of 100-200 meters, with a maximum recorded dive depth of 404 meters.	Started in 1989 as MM5, which was closed out as R73. Continued as 94064.

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93047	Subtidal Monitoring	ADEC, ADFG, NOAA	The results of this project will be presented in three reports (funded under 94285): (1) NOAA sediments - Final report available to public at OSPIC. (2) ADEC microbiology - Final report available to public at OSPIC. (3) ADFG eelgrass - Final report available to public at OSPIC.	(1) Recovery of sediments in the subtidal sediment environment inside PWS. (2) Braddock, J. Microbiology of subtidal sediments: monitoring and microbial populations. (3) Jewett, S., et al. The effects of the <i>Exxon Valdez</i> oil spill on shallow subtidal communities in PWS 1989-93. As a follow-up to previous studies from 1989-1991, the numbers and activity of oil-degrading microorganisms were measured in sediments collected in 1993. Preliminary results suggest some contamination remains in subtidal sediments. However, generally very low numbers were found where visible oil was present (e.g., subsurface sediments, Northwest Bay). Analysis of 1993 eelgrass data complete. Several infaunal and epifaunal taxa more abundant in oiled bed sites than control sites. Amphipods less abundant in oiled sites. Sea urchins are more abundant. <i>Hemosiderosis</i> in fishes from oiled sites.	Started as ST1A and continued as 94285. Report writing under 94285.
93049	Monitor Murre Colony Recovery	DOI/ FWS	Final report available to public at OSPIC.	Roseneau, D. 1995. Common murre Restoration monitoring in the Barren Islands, Alaska, 1993. U.S. Fish and Wildlife Service, AK Maritime NWR, Homer, AK. Murre productivity in the Barren Islands was 0.4 - 0.6 chicks per nest site in 1993, up from near zero in 1989. Population counts on plots were similar to or higher than in previous postspill years.	Started as R11 and continued as 94039. (Formerly in EVOS database as 93022.)

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93051	Habitat Information for Anadromous Streams and Marbled Murrelets	ADFG, DOI, USFS	The results of this project will be presented in 5 reports (funded under 94505): (1) ADFG Stream Habitat Assessment/PWS & Lower Kenai- Final report available to public at OSPIC. (2) USFS Habitat Protection Info. for Channel Type Classification Study- findings included in report prepared under 95505B. See 95505B for results. (3) DOI Pilot Study on Capture and Radio Tagging of Murrelets in PWS- Final report accepted by Chief Scientist; not yet at OSPIC. (4) DOI Information Needs for Habitat Protection: Marbled Murrelet Habitat Identification -Final report available to public at OSPIC. (5) USFS Upland Nesting Habitat of Marbled Murrelet - Final report available to public at OSPIC.	(1) Sundet, K., et al. 1994. Stream habitat assessment project: Prince William Sound and Lower Kenai Peninsula. ADFG (2) See 95505B. (3) Burns, R.A., et al. 1994. Pilot study on the capture and radio tagging of murrelets in PWS, AK, July and August, 1993. U.S. Fish and Wildlife Service, Anchorage, AK. (4) Kuletz, K.J., et al. Information needs for habitat protection: marbled murrelet habitat identification. 1994. (5) Characterization of the upland nesting habitat of the marbled murrelet in the <i>Exxon Valdez</i> spill area. Late season surveys, sites at the heads of bays, low elevations, high percentages of forest cover, and large trees were all consistent predictors of high murrelet activity. Radar performed better than humans in detecting murrelets and was cheaper than boat-based or ground-based surveys by humans. About 995 km of shoreline and 117 km² of uplands were surveyed for anadromous fish streams on private lands on the lower Kenai Peninsula and in Prince William Sound, resulting in discovery of 186 anadromous streams totaling about 57 km. Stream habitat parameters were collected along all streams, upper extents of anadromous distribution were documented and streams were mapped by GIS.	Evolved from R15 and R47. Also related to 93045. Project closeout in FY 94 as 94505 and in FY95 as 95505B.

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93053	Hydrocarbon Database	NOAA	No report required.	Continuing project with updating and quality control of hydrocarbon data. Analyzed several thousand environmental samples, provided numerical correlations directly related to oil, and assessed associations of observed biological effects with concentrations of <i>Exxon Valdez</i> oil.	Continued as 94290. This project supports most restoration projects.
93057	Damage Assessment GIS	ADNR	No report required.	Cataloged and plotted over 160 maps for public access at OSPIC. Provided mapping and database support for damage assessment studies.	Supported numerous damage assessment projects, including B11, FS13, AW1, and CH1A.
93059	Habitat Identification Workshop	USFS	No report required.	Identified parcels of non-public land containing critical habitat necessary for the recovery of injured resources and services.	
93060	Accelerated Data Acquisition	USFS	No report required.	Collected and organized existing resource data needed for the analysis of private lands in the oil spill area.	
93062	Restoration GIS	ADNR	No report required.	Provided technical mapping and database support for restoration projects. Generated spill area map and land status maps for Kachemak Bay, Seal Bay, and Eyak lands in support of habitat protection data analysis and negotiations. Plotted maps to provide public access to EVOS information.	Supported numerous restoration projects, including 93038, 93063, 93064 and R47.

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93063	Anadromous Stream Surveys	USFS	Project is data analysis and report writing for anadromous stream portion of R105. See R105 for status.	See R105.	Started as R105 and continued as 94139.
93064	Imminent Threat Habitat Protection	ADNR	No report required.	See "Opportunities for Habitat Protection/Acquisition" (2/16/93) and "Comprehensive Habitat Protection Process; Large Parcel Evaluation & Ranking, Volume I" (11/30/93). Imminent Threat Evaluation and the first round of Large Parcel Evaluation were completed. \$7.5 million from settlement funds was combined with \$14.5 million from other sources for the purchase of private inholdings in Kachemak Bay. \$29,950,000 was committed from the most recent court request for the initial payment for purchase of private land near Seal Bay on Afognak Island. The total purchase price of this transaction is \$38,700,000 with the balance to be paid in three annual installments.	
93065	Prince William Sound Recreation	USFS	Report (funded under 94217) submitted to OSPIC; undergoing formatting review.	Menefee, W. and S. Hennig. 1994. USFS. Prince William Sound recreation project. Recreation Injury Statement (10/93) was incorporated into the Draft Restoration Plan. Final report includes a prioritized list of projects and other recommendations for restoration of recreation in Prince William Sound.	Close-out/report writing funded under 94217.

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93066	Alutiiq Archeological Repository	ADEC	No report required.	Opening ceremony held May 13, 1995.	
93067	Pink Salmon Coded Wire Tag Recovery	ADFG	Final report available to public at OSPIC.	Sharr, S., and Peckham, C.J. 1993. Coded wire tag recoveries from pink salmon in PWS fisheries. Reduced commercial exploitation of damaged wild pink salmon populations through timely inseason estimates of hatchery and wild contributions to harvest. Accurate and timely stock composition estimates were used by fisheries managers to justify restriction of fishing fleet to areas where interception of damaged wild populations in mixed-stock fisheries could be minimized.	Started as FS3 and continued as R60A, 94184 (report preparation) and 94320B.
93068	Non-Pink Salmon Coded Wire Tag Recovery	ADFG	1993 results will be included in report being prepared under 94137. See 94137 for status.	See 94137. Timely and accurate inseason estimates of hatchery and wild stock contributions to commercial harvest for improved management of wild stocks in mixed-stock fisheries.	Evolved from FS3; continued as 94137.
93AD	Administrative Director's Office		No report required.		
93FC	Financial Committee		No report required.		
93RT	Restoration Team Support		No report required.		

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94007	Site Specific Archaeological Restoration	ADNR	The results of this project will be presented in two reports (funded under 95007A): (1) Site protection plan available to public at OSPIC. (2) Annual report peer reviewed; available to public at OSPIC.	(1) Bittner, J.E. and D.R. Reger. 1995. The 1994 EVOS report, spill area site and collection plan. ADNR, Anchorage, Alaska. (2) Reger, D. 1994. Archaeological site monitoring and restoration. Monitoring: ADNR monitored seven sites on Shuyak Island and Outer Kenai Coast (including three at Nuka Island) and found oil but no evidence of new disturbance. USFWS monitored six sites on Afognak Island and found no indication of new vandalism. NPS monitored two sites, McArthur Pass in Kenai Fjords National Park and Cape Gull on the Katmai coast, and found no new damage. Data Recovery: USFS began restoration of two sites in PWS: SEW-440 and SEW-448. Site Protection Plans: ADNR compiled information about the need for site protection, with emphasis on adequate curation of collections in the spill area.	Continuation of 93006.
94020	Black Oystercatcher Interaction with Intertidal	DOI	Project is close-out/report writing for 93035. See 93035 for status.	See 93035.	Close-out/report writing for 93035.

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94039	Common Murre Population Monitoring	DOI/FWS	Revised draft of final report (funded under 95039) submitted to Chief Scientist October 4, 1996; under peer review.	Roseneau, D.G., A.B. Kettle, and G.V. Byrd. Common murre restoration monitoring in the Barren Islands, Alaska in 1994. U.S. Fish and Wildlife Service, Alaska Maritime NWR, Homer, AK In 1994, complete censuses and replicate index plot counts were made at the East Amatuli Island-Light Rock and Nord Island murre colonies. Although a marginally significant increasing trend was found over the 6-year post-spill period at one 2-plot index area at East Amatuli Island-Light Rock, no significant trends were detected in the other 1989-1994 East Amatuli Island-Light Rock and Nord Island population data sets. Productivity was high (0.7 fledglings per nest site) and within normal bounds, compared with other colonies.	Begun as R11; continued as 93022. Close-out/report writing under 95039.
94041	Introduced Predator Removal from Islands	DOI/FWS	Annual report peer reviewed; available to public at OSPIC.	Bailey, E. 1995. Introduced predator removal in the Shumigan Islands. U.S. Fish and Wildlife Service, Alaska Maritime NWR, Homer, AK. Removed 33 arctic foxes from Simeonof Island (no more believed remaining); removed 3 arctic foxes from Chernabura Island (population appeared to be dying out naturally). Censused populations of black oystercatchers and pigeon guillemots on above islands as well as on nearby islands with no foxes (controls). No oystercatcher nests found on fox islands; densities of both oystercatchers and guillemots are much less on fox islands than on fox-free ones. Recovery of nesting populations of oystercatchers and guillemots is expected to begin in 1995 on Simeonof and Chernabura islands.	

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94043A1	Eshamy River Restoration (W. PWS)	USFS	Project discontinued.		
94043A2	Gumboot Creek Restoration (W. PWS)	USFS	No report required (NEPA only).		NOTE: Also known as Gunboat Creek.
EA completed and decision notice signed July 27, 1995.					
94043A3	Stream No. 508 Restoration	USFS	Project discontinued.		
94043A4	Stream No. 509 Restoration (W. PWS)	USFS	Project discontinued.		
94043A5	Otter Creek/Lake Restoration (Knight I.)	USFS	No report required (NEPA only).		
EA completed and decision notice signed June 28, 1995.					

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94043A6	Miners Creek/Lake Restoration (N. PWS)	USFS	Project discontinued.		
94043A7	Shrode Creek/Lake Restoration (W. PWS)	USFS	No report required (NEPA only).		
EA completed and decision notice signed June 28, 1995.					
94043B1	Sockeye Creek/Lake Restoration (Knight I.)	USFS	No report required (NEPA only).		
EA finalized and signed. EA concluded that Sockeye Creek is not a cost effective site for this project at this time.					
94043B2	Rocky Creek/Bay Restoration (Montague)	USFS	Redraft of final report submitted to Chief Scientist April 30, 1996; under peer review.		

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94064	Harbor Seal Habitat Use and Monitoring	ADFG	Annual report (which includes results of 94320F) peer reviewed; available to public at OSPIC. NOTE: Project also includes report writing funds for 93046.	Frost, K., et al. 1995. Habitat use, behavior, and monitoring of harbor seals in PWS, AK. ADF&G. Twenty-six seals caught and sampled September 1994 (blood, whiskers for stable isotopes, blubber for fatty acids, skin for genetics, measurements). Twelve of these instrumented with satellite-linked time-depth recorders (6 adults, 6 subadults). Aerial surveys conducted during molting period in September. Preliminary survey analysis suggests no marked increase or decrease since 1993. Eight SLTDRs functioning on 11/10/94. Most seals remain local in PWS; one subadult in Gulf of Alaska.	Started as MMS; continued as R73, 93046, and 95064.
94066	Harlequin Duck Recovery Monitoring	ADFG	Project is close-out/report writing for 93033. See 93033 for status.	See 93033.	Close-out/report writing for 93033.
94086	Herring Bay Experimental and Monitoring Studies	ADFG	Annual report peer reviewed; available to public at OSPIC.	Highsmith, R.C., et al. Herring Bay monitoring and restoration studies. UAF/ADF&G Four field trips were conducted in 1994 for data and sample collections. Data was collected for population dynamics, barnacle recruitment, and water circulation studies.	Population dynamics portion of 93039.
94090	Mussel Bed Restoration and Monitoring	NOAA	Annual report peer reviewed; available to public at OSPIC.	Babcock, M.M., P.M. Harris, S.D. Rice, R.J. Bruyere, and D.R. Munson. 1995. Recovery monitoring and restoration of oiled mussel beds in Prince William Sound, AK. NOAA/NMFS, Juneau, AK Twelve mussel beds were cleaned and restored in 1994.	CH1B and 93036. Continued as 95090.

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94092	Killer Whale Recovery Monitoring	NOAA	Project is close-out/report writing for 93042. See 93042 for status.	See 93042.	Continuation of 93042.
94102	Marbled Murrelet Prey and Foraging Habitat in Prince William Sound	DOI/FWS	Final report (funded under 95102) accepted by Chief Scientist. Not yet at OSPIC.	Kuletz, K.J., D.K. Marks, R. Burns, and L. Prestash. Marbled murrelet foraging patterns and habitat use during the breeding season in PWS. Forty-seven murrelets were radio-tagged. Foraging ranges were obtained by tracking birds with boats and planes. Birds foraged up to 60 kms. from their nests (average 10 km.). The average distance from shore was 0.6 km.	R15, 93051, 95102
94110	Habitat Protection - Data Acquisition and Support	ADNR	No report required.	See Habitat Protection Working Group, "Comprehensive Habitat Protection Process; Large Parcel Evaluation and Ranking" Volumes I and II (November 2, 1994 Supplement).	Close-out under 95110-CLO.
94126	Habitat Protection and Acquisition Fund	ADNR	No report required.		94110

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94137	Stock Identification of Chum, Sockeye, Chinook, and Coho in PWS	ADFG	Redraft of final report submitted to Chief Scientist August 14, 1996. (Report is funded under 95137 and incorporates results of 93068.)	Scanned approximately half a million sockeye salmon and 1/3 million chum salmon in PWS for tags. Results of sockeye tag recoveries were used to manage fisheries in western PWS. Interception of Coghill Lake-bound wild fish was kept to a minimum.	Evolved from FS03; continued as 93068 and 95137.
94139A1	Waterfall Creek Bypass Instream Restoration	ADFG	No report required (project carried forward as Project 95139A1).		94043, carried forward as 95139A1
94139A2	Port Dick Spawning Channel	ADFG	No report required (project carried forward as 95139A2).		
94139B1	Otter Creek Bypass Instream Restoration	USFS	Annual report peer reviewed; available to public at OSPIC.	Wedemeyer, K., et al. 1995. Instream habitat and stock restoration for salmon, Otter Creek barrier bypass subproject. USDA Forest Service, Chugach N.F., Anchorage, AK	95139B
				Otter Creek bypass rehabilitation completed.	

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94139B2	Shrode Creek Bypass Instream Restoration	USFS	Annual report peer reviewed; available to public at OSPIC.	Wedemeyer, K., et al. 1995. Stream habitat and stock restoration for salmon, Shrode Creek barrier bypass subproject. USDA Forest Service, Chugach N.F., Anchorage, AK Shrode Creek bypass renovation completed.	95139B
94139C1	Montague Island Chum Instream Restoration	USFS	Annual report peer reviewed; not yet at OSPIC.	Schmid, D., et al. 1995. Montague Island chum salmon restoration. USDA Forest Service, Chugach N.F., Cordova, AK Project completed for three streams on Northern Montague Island. This project completed 32 structures and 15 acres of thinning.	95139C1
94139C2	Lowe River (6.5 Mile) Instream Restoration	ADFG	No report required (project carried forward as Project 95139C2).		95139C2
94159	Marine Bird & Sea Otter Boat Surveys	DOI	Final report available to public at OSPIC.	Agler, B.A., S.J. Kendall, P.E. Seiser, and D.B. Irons. 1995. Marine bird and sea otter abundance of PWS, Alaska: Trends following the T/V <i>Exxon Valdez</i> oil spill. Estimated 320,470 plus-or-minus 63,640 marine birds in PWS in March 1994. Goldeneye and merganser populations may still be showing effects from oil spill. They are both increasing faster in the unoiled area than in the oiled area.	Began as B2; continued as 93045.

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94163	Forage Fish Influence on Recovery of Injured Species	NOAA, ADFG	The results of this project will be presented in two reports: (1) <u>NOAA</u>: Annual report peer reviewed; available to public at OSPIC. (2) <u>ADFG</u>: Annual report peer reviewed; available to public at OSPIC.	(1) Tyler, A., et al. Forage fish study in PWS, AK. UAF/NMFS. Appendix by B. Ostrand, USFWS/DOI. (2) Willette, M., et al. Forage fish influence on recovery of injured species; forage fish diet overlap. <u>NOAA</u>: August cruise: (a) Hydroacoustic data showed fish schools mainly in the more shallow water regions near the bottom; fish appeared absent from mid-water layers over the deep passages. November cruise: (a) Temperature-depth profiles for open areas of PWS showed surface temperature 7.0C, warming to 9.0C at 50m depth. Water cooled to 5.0C with further increase in depth. Salinity gradually increased through this depth range, indicating little mixing of the water column and that cooling was occurring from the surface downward due to cold air temperatures. Over the shallow shelf areas the profiles were different, being at 8.0C and mixed to 70m. (b) Five stations were sampled for invertebrate forage species, with euphausiids the abundant crustacean at most stations. (c) Hydroacoustic analysis showed fish mainly located above the temperature maximum at depths of 20 to 40 meters (net sampling showed these fish were young herring mixed with young pollock). Hydrographic data indicated fish aggregations were at temperatures of 7.0 to 7.5C. A second layer of fish was seen near the bottom (likely adult pollock). <u>ADFG</u>: Approximately 1,500 stomach samples collected for analysis of diet overlap. Found Pacific herring, walleye pollock, and juvenile chum salmon common and widespread throughout western PWS.	Integrate with Projects 94320 (PWS System Investigation), 94102 (Murrelet Prey), and 94173 (Pigeon Guillemot).
94165	Herring Genetic Stock Identification in Prince William Sound	ADFG	Project deferred to FY 95 (95165).		95165

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94166	Herring Spawn Deposition and Reproductive Impairment	ADFG, NOAA	The results of this project will be presented in two reports: (1) ADFG annual report peer reviewed; available to public at OSPIC. (2) NOAA annual report peer reviewed; available to public at OSPIC.	(1) Wilcock, J.A., E.D. Brown and E. Debevec. Herring spawn deposition and reproductive impairment. (2) Carls, M.G., S.D. Rice, and R.E. Thomas. 1995. Impact of exposure of adult pre-spawn herring (<i>Clupea harengus pallasii</i>) on subsequent progeny. NOAA/NMFS, Juneau, AK. Adult herring bioaccumulated hydrocarbons, including ovarian tissue and ova. Adults were stressed by oil when VHS was present; VHS prevalence was correlated with PAH concentration. Eggs and larvae were not impacted by parental exposure to hydrocarbons. Factors unaffected included egg fertility, time of hatch, survival, larval stage at hatch, swimming ability, morphology, chromatid separation, and number of mitotic figures.	Coordinating with USFS regarding avian predation (94320Q).
94173	Pigeon Guillemot Recovery Monitoring	DOI/FWS	Final report available to public at OSPIC.	Hayes, D. L. 1995. Recovery monitoring of pigeon guillemot populations in PWS, Alaska. USFWS, Anchorage, AK. Found evidence of predation on eggs and chicks on Naked Island and abandonment of eggs on Jackpot Island. On Naked Island, gadids were much more prevalent and sand lance much less prevalent in the diet of chicks in 1994 than in 1979-81. Herring or smelt accounted for ca. 32% of prey items delivered to chicks at Jackpot Island, but only ca. 1% at Naked Island.	Continued from 93034.
94184	Coded Wire Tag Recoveries from Pink Salmon in PWS	ADFG	Project is close-out/report writing for 93067. See 93067 for status.	See 93067.	Began as FS3. Continued as R60A, 93067, and 94320B.

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94185	Coded Wire Tagging of Wild Pinks for Stock Identification	ADFG	Project discontinued.		
94191	Oil Related Egg and Alevin Mortalities	ADFG, NOAA	The results of this project will be presented in two reports: (1) ADFG annual report peer reviewed; PI revised and returned to Chief Scientist December 17, 1996. (2) NOAA annual report peer reviewed; available to public at OSPIC. (NOTE: Project also includes report writing funds for R60C and 93003.)	(1) Seeb, J.E., et al. Oil related egg and alevin mortalities. ADF&G (2) Heintz, R.A., S.D. Rice, and J.W. Short. 1995. Injury to pink salmon eggs and pre-emergent fry incubated in oiled gravel (laboratory study). NOAA/NMFS, Juneau, AK <u>ADFG</u> - Collected gametes from 8 controlled and 8 oiled streams. These eggs are now being incubated and will be analyzed in 1995. <u>NOAA</u> - 1992 brood died from bacterial kidney disease. 1993 brood emerged from incubators by 5/15/94. 18,000 fish were coded wire tagged and released May 1994; 14,000 fish were retained for PIT tagging later in the summer. Dose-related differences in growth and size of 1992 brood year observed in October 1993 were not as apparent in April 1994. Embryo survival to the development of the eye and emergence from substrate were measured in 1993 brood year, and clear relationship was observed between dose and survival to both developmental stages. During emergence period, inspected over 50,000 newly emerged fry for visible lesions and observed a dose relationship with the proportion of fish displaying edema.	Began as FS02 and R060C; continued as 93003.
94199	Institute of Marine Science - Seward Improvements	ADFG	No report required.	Record of Decision signed by DOI, DOA (USFS), and NOAA October 31, 1994. Capital funding approved by Trustee Council November 2, 1994, subject to Executive Director's approval.	Continued as 95199-CLO.

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94217	Prince William Sound Area Recreation Implementation	USFS	Project is close-out/report writing for 93065. See 93065 for status.	See 93065.	Close-out of 93065.
94244	Harbor Seal and Sea Otter Co-op Subsistence Harvest Assistance	ADFG	Annual report peer reviewed; available to public at OSPIC. (NOTE: Report also contains results from 95244.)	Fall, J. 1995. Harbor seal (<i>Phoca vitulina</i>) and sea otter (<i>Enhydra lutrus</i>) cooperative subsistence harvest assistance. ADF&G A harbor seal/sea otter restoration workshop took place in Anchorage December 2, 1994. It was attended by more than thirty people, including representatives from eight communities which use marine mammals for subsistence. A second workshop took place on March 2, 1995.	Continued as 95244.
94246	Sea Otter Recovery Monitoring	DOI	Project is close-out/report writing for 93043. See 93043 for status.	See 93043.	Close-out/report writing for 93043.
94255	Kenai River Sockeye Salmon Restoration	ADFG	The results of this project will be presented in two reports: (1) Annual report peer reviewed; available to public at OSPIC. (2) Results of genetics component of project contained in report being prepared under Project 93012. See 93012 for status.	(1) Tarbox, K.E., R.Z. Davis, L.K. Brannian, and S.M. Fried. 1995. Kenai River sockeye salmon restoration. ADF&G, Soldotna, AK. (2) Seeb, J. See 93012.	Began as R53; continued as 93012 and 93015.

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94258	Sockeye Salmon Overescapement	ADFG	Annual report peer reviewed; available to public at OSPIC. NOTE: Project also includes report writing funds for 93002.	Skilak weight of fall predictive on both escapements and fall fry abundance. 1994 fall fry had low abundance and weight. Lipid comparisons of similar length fall fry from Tustumena and Skilak indicated Skilak fall fry entered winter in poor condition in 1993. 1995 adult return needed to define magnitude and duration of reduced sockeye production.	Started as FS27; continued as 93002 and 95258.
94259	Coghill Lake Sockeye Salmon Restoration.	ADFG	Annual report peer reviewed; available to public at OSPIC.	Edmundson, J.A., G.B. Kyle, and S.R. Carlson. 1995. Restoration of Coghill Lake sockeye salmon: 1994 annual report on nutrient enrichment restoration. ADF&G, Soldotna, AK. Estimated 900,000-1,800,000 smolts outmigrated this year. Escapement approximately 7,200 adults. Response of phytoplankton to liquid fertilizer applications suggests fertilizer is not being lost to the anaerobic layer, but is actually improving the productivity of Coghill Lake.	Began as 93024.
94266	Shoreline Assessment and Oil Removal	ADEC, DOI/NBS	The results of this project will be presented in two reports: (1) DOI/NBS: REPORT OVERDUE. Redraft of final report peer reviewed and returned to PI for revision June 18, 1996. Due date for submission of redraft extended to October 30, 1996; report not yet received. (2) ADEC: Final report accepted by Chief Scientist; not yet at OSPIC.	(1) Irvine, G. NBS/DOI. Fate and persistence of oil stranded on Gulf of Alaska shorelines during EVOS. (2) Munson, D. ADEC. Shoreline assessment and oil removal.	

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94272	Chenega Chinook Release Program	ADFG	Annual report peer reviewed; available to public at OSPIC.	50,300 chinook smolts released at Crab Bay on 5/27/94. Chenega residents reared and fed smolts in net pens prior to release.	Continuation of 93016.
94279	Subsistence Food Safety Testing	ADFG	Final report peer reviewed and returned to PI for revision June 12, 1996.	Miraglia, R. Subsistence restoration project: food safety testing. Test results on final fish and shellfish samples received from NMFS lab. All results so low as to be within margin of error for tests. Seal samples from Tatitlek and duck samples from Chenega Bay were collected by ADFG with assistance from local subsistence hunters. Test results found hydrocarbon contamination was at background levels.	Continuation of 93017.
94285	Subtidal Sediment Recovery Monitoring	NOAA	Annual report peer reviewed; available to public at OSPIC. (NOTE: Project also includes report writing funds for 93047.)	O'Clair, C.E., J.W. Short, and S.D. Rice. 1995. Subtidal monitoring: recovery of sediments in the Northwestern Gulf of Alaska. NOAA/NMFS, Juneau, AK.	Continuation of ST2A and 93047. Continued as 95106.
94290	Hydrocarbon Data Analysis and Interpretation	NOAA	No report required.	In FY94, 2,742 samples were received and several hundred were submitted for analysis.	Continuation of ST8 and 93053. Continued as 95290.

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94320A	Salmon Growth and Mortality	ADFG	Consolidated annual report peer reviewed; available to public at OSPIC.	Growth rate of juvenile pink salmon in 1994 in PWS slightly above average compared to 1989-1993 period.	
94320B	Coded Wire Tagging Recovery-PWS Pinks	ADFG	Annual report peer reviewed; available to public at OSPIC.	Sharr, S., et al. 1994. Coded wire tag recoveries from pink salmon in PWS salmon fisheries. ADF&G. Common property fisheries: 26.2 million caught, 4.4 million scanned (17%), 3,600-4,000 tags recovered. Hatchery revenue sales: 10.4 million caught, 2 million scanned (19%), 1,600 tags recovered. Scanned close to 100% of brood stock from PWS salmon hatcheries. Used results of in-season analysis, based on detection of tags, for critical management decisions regarding fishing areas and times. Ability to detect wild stock shortfalls and high abundance of hatchery fish contributed to meeting restoration goals.	Continued as 96186.
94320C	Otolith Mass Marking of PWS Pink Salmon	ADFG	Annual report peer reviewed; available to public at OSPIC.	Feasibility study initiated at PWSAC Cannery Creek Hatchery. Approximately 50,000 fry were immersed for different lengths of time and at different temperatures to determine optimum treatment for marking effectiveness and survival. Completed examination of otoliths subjected to varying levels of oxytetracycline and varying temperatures at ADFG lab. Marking was not successful for any of the treatment groups.	Continued as 96188.

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94320D	Pink Salmon Genetics	ADFG	Results of this project are included in report being prepared under Project 95320D. See 95320D for status.		94184, 94191
In ADFG lab, DNA data show upstream and intertidal spawners in the same stream genetically differ. Have also found that mainland and island populations genetically differ.					
94320E	Salmon Predation	ADFG	See 94320A.		
Walleye pollock, adult pink salmon, Pacific herring, and dolly varden trout identified as important predators on juvenile salmon in Prince William Sound.					
94320F	Harbor Seals-Trophic Interactions	ADFG	Data/findings integrated into report prepared on 94064. See 94064 for status.	See 94064.	94064. Combined with 95064 for 1995.
Preliminary fatty acid analysis of blubber samples indicates several distinct feeding patterns. Some seals appear to eat plankton-eating fishes and others piscivorous fishes/prey such as pollock and squid. Stable isotope analysis indicates different feeding patterns for subadults and most adults. Adult females in particular show a strong annual shift in prey.					

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
94320G	Phytoplankton and Nutrients	ADFG	See 94320A.		
94320H	Role of Zooplankton in PWS Ecosystem	ADFG	See 94320A.	Time series of zooplankton biomass tracks predation on 0-class fish in April, May, and June.	95320H
94320I	Food Web Dependencies in PWS Ecosystem/Stable Isotopes	ADFG	See 94320A.	<u>Food Web of Fishes</u> - Conducted isotopic analysis of approximately 500 samples (i.e., roughly 2,000 isotopic determinations). <u>Marine Mammal Trophic Energetics</u> - Conducted isotopic analysis of vibrissae of 23 seals, roughly 30 samples per whisker.	
94320J	Information Systems and Model Development	ADFG	See 94320A.		

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94320K	PWSAC-Experimental Fry Release	ADFG	See 94320A.		
				Adult pink salmon will return in summer 1995 as a result of 1994 fry release. Marine survivals will be estimated based on coded wire tag data. Rearing and release strategies will be compared and differences in marine survival evaluated between rearing and release groups.	
94320L	PWSAC-Experimental Manipulation	ADFG	Final report available to public at OSPIC.		
94320M	Physical Oceanography in PWS and Gulf of Alaska	ADFG	See 94320A.		
94320N	Nearshore Fish	ADFG	See 94320A.		
94320P	SEA Program: Program Management	ADFG	See 94320A.		All subprojects of 94320.

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
94320Q	Avian Predation on Herring Swan	USFS	See 94320A.	Bishop, M.A. 1995. Avian predation on herring spawn. Copper River Delta Institute, USDA Forest Service, Cordova, AK	95320Q
94320S	Disease Impacts on Herring	ADFG	Annual report peer reviewed; available to public at OSPIC.	<i>Ichthyophonus hoferi</i> , viral hemorrhagic septicemia virus, and other causes of morbidity in Pacific herring spawning in PWS in 1994. ADF&G. Because of the important of <i>Ichthyophonus</i> in herring morbidity in 1994, all previous Pacific herring sampled from PWS and submitted to UC Davis (1989, 1990, 1991, 1992) were re-screened for <i>Ichthyophonus</i> . Prevalence in these samples was never more than 15% and was distributed fairly evenly among liver, kidney, and spleen, but was never in the olfactory nares.	
94417	Waste Oil Disposal Facilities	ADEC	No report required (project carried forward as 95417).		95417
94422	Environmental Impact Statement for the Draft Restoration Plan	USFS	No report required.	Final EIS released September 30, 1994. Notice of Availability in Federal Register, Vol. 59, No. 186, p. 49232, dated 9/27/94 and Vol. 59, No. 189, p. 49926, dated 9/30/94. Record of Decision (ROD) signed October 31, 1994. Copies of FEIS available through OSPIC.	Continued as 95422.

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94423	Oil Spill Public Information Center (OSPIC)	ALL	No report required.	During the quarter ending 12/31/96, OSPIC staff received 323 visitors, responded to 667 requests for information (of which 149 were sent via e-mail from the Web Home Page), processed 40 interlibrary loans, loaned 258 items, distributed 1,038 documents, and acquired 2 books and 1 report. 578 documents were added to the Trustee Council Administrative Record and 2 Marine Ecosystem posters were sold. OSPIC staff received 3 NRDA/Restoration Project final reports for format review, approved 1, and distributed final copies of 7. OSPIC staff received 4 annual reports for format review, approved 4, and received final copies of 5. From 10/1/96 through 12/31/96, 5,488 people used the OSPIC World Wide Web Home Page.	

94424	Restoration Reserve	ALL	No report required.
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The Restoration Reserve was formally established by the Court Registry Investment System on February 15, 1996. The reserve consists of securities structured to mature annually on November 15 beginning in 1997 and ending in the year 2002. To date, total of \$36 million has been placed in the Reserve. The Trustee Council approved the transfer of another \$12 million on August 29, 1996. Pursuant to the approval motion, the transfer will be made at such time as the Executive Director determines that funds are available.

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94425	Marine Mammal Book	NOAA	No report required.	See Marine mammals and the <i>Exxon Valdez</i> . Loughlin, T.R., editor. 1994. Academic Press, Inc. 395 pages. Book printed and for sale by Academic Press.	
94427	Experimental Harlequin Duck Breeding Survey	ADFG	Annual report peer reviewed; available to public at OSPIC.	Rosenberg, D.H. 1995. Experimental harlequin duck breeding survey in Prince William Sound, AK. ADF&G, Anchorage, AK.	B11, R71, 93033, 94066, 95427, and nearshore ecosystem projects.
94428	Subsistence Restoration Planning and Implementation	ADFG	Final report (which also includes results from 95428) available to public at OSPIC.	Fall, J. ADF&G. Subsistence restoration planning and implementation.	
94504	Genetic Stock Identification of Kenai River Sockeye	ADFG	Project is close-out/report writing for 93012. See 93012 for status.	See 93012.	Close-out/report writing for 93012.
94505	Information Needs for Habitat Protection	USFS	Findings included in report prepared under 95505B. See 95505B for status.	See 95505B.	Close-out of 93051. 95505B.

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94506	Pigeon Guillemot Recovery	DOI	Project is close-out/report writing for 93034. See 93034 for status.	See 93034.	Report writing for 93034.
94507	Symposium Proceedings Publication	NOAA	The 926-page EVOS Symposium Proceeding is published with distribution beginning September 1996. The publisher, American Fisheries Society (AFS), will maintain sales records which will be supplied to the PI.	Rice, S.D., R.B. Spies, D.A. Wolfe, and B. A. Wright, editors. 1996. Proceedings of the <i>Exxon Valdez</i> oil spill symposium. American Fisheries Society Symposium 18, Bethesda, Maryland. Proceedings include 61 manuscripts in the following topic areas: fate and toxicity (8 manuscripts), intertidal (10 manuscripts), treatment effects (5), subtidal (3), herring (2), salmon (12), other fish (5), birds (8), mammals (2), archaeology (1), subsistence (4), human impacts (2). NOTE: In FY 96, the Trustee Council approved an additional \$42,000 for the completion of the proceedings (Project 96507).	Continued as 96507.

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Printed: February 10, 1997

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency/ P.I.</u>	<u>Report/Status</u>	<u>References and Results</u>	<u>Related Projects</u>
95001	Condition and Health of Harbor Seals	ADFG Castellini, UAF	Annual report submitted to Chief Scientist April 11, 1996; under peer review.	Castellini, J.M., N.J. Meiselman, and M.A. Castellini. Understanding and interpreting hematocrit measurements in pinnipeds. Marine Mammal Science 12(2):251-264. Hematocrit measurements of pinnipeds were 4-15% higher when utilizing clinical Coulter counter methods as opposed to the more direct method of microcentrifugation. Manual restraint of animals, isoflourane anesthesia, and developmental states also affected hematocrit measurements in pinnipeds. Thus, modelling efforts that require representative hematocrit values can be markedly impacted by variations in hematocrit measurement techniques and sampling regimens.	96001
95007A	Archaeological Site Restoration - Index Site Monitoring	ADNR Reger	Annual report peer reviewed; available to public at OSPIC.		
95007B	Archaeological Site Restoration	USFS Yarborough	Partial draft of final report peer reviewed and returned to PI for revision December 20, 1996. Complete draft due to Chief Scientist by February 28, 1997. [Note: An FY 95 annual report was also submitted under this project number. It is available to the public at OSPIC, but has not been peer reviewed. The annual report was not required under Trustee Council report writing procedures.]		Report writing funded under 96007B.
95009D	Survey of Octopus and Chiton in Intertidal Habitats	USFS Scheel, PWSSC	Annual report peer reviewed; available to public at OSPIC.	Scheel, D., et al. 1996. Survey of octopus in the intertidal in PWS, AK. PWSSC, Cordova, AK	96009D
95012	Comprehensive Killer Whale Investigation	NOAA Matkin	Annual report peer reviewed; available to public at OSPIC.		96012A

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency/ P.I.</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
95021	Seasonal Movement and Pelagic Habitat Use by Common Murres from the Barren Islands	DOI (NBS) Hatch	Final report available to public at OSPIC.		
95025	Mechanisms of Impact and Potential Recovery of Nearshore Vertebrate Predators	DOI Holland-Bartels	Annual report peer reviewed; available to public at OSPIC.		96025
95025A	Nearshore Package: Project Planning and Development	DOI (NBS) Holland-Bartels	No report required.		96025
95026	Hydrocarbon Monitoring: Integration of Microbial and Chemical Sediment Data	ADEC Braddock	Final report being completed under Project 97026. See 97026 for status.		
95027	Kodiak Shoreline Assessment: Monitoring Surface and Subsurface Oil	ADEC Piper	Final report accepted by Chief Scientist; not yet at OSPIC.	E. Piper. 1995 Kodiak Shoreline Oiling Assessment of EVOS.	
95029	Population Survey of Bald Eagles in PWS	DOI (FWS) Schempf	Final report peer reviewed and returned to PI for revision April 8, 1996.	Bowman, T., Schempf, P., Hodges, J. 1996. Bald eagle populations in PWS, Alaska after the <i>Exxon Valdez</i> oil spill. USFWS/DOI	
				Surveys indicated increase in population size and apparent recovery from spill.	
95031	Reproductive Success as a Factor Affecting Recovery of Murrelets in PWS	DOI (FWS) Kuletz	Draft final report peer reviewed and returned to PI for revision October 26, 1996.	Kuletz, K.J., Kendell, S. developing a productivity index for marbled murrelets. USFWS/DOI	94102; final report under 96031.
				Six sites in PWS were surveyed repeatedly by boat, June-August (n=65 surveys). Adult and juvenile seasonal patterns were described. Juvenile ratios and densities were significantly different between some sites. June adult numbers were most strongly correlated with juvenile numbers in July/August. An optional survey period was identified and power analysis defined necessary sample sizes.	

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency/ P.I.</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
95038	Symposium on Seabird Restoration	DOI (FWS) Harrison, PSG	REPORT OVERDUE. Final report, in addition to publication of workshop proceedings, was to be submitted to Chief Scientist November 1996 -- not received.	Workshop took place September 29-October 2 in Girdwood, AK. Roughly 47 participants from Great Britain, Belgium, France, New Zealand, Japan, Canada, and USA. Primary focus was on common murre, harlequin duck, marbled murrelet, and pigeon guillemot. Achieved workshop goal by discussing seabird restoration in general, then applying the general discussions and conclusions to EVOS.	
95039	Common Murre Productivity Monitoring	DOI (FWS) Roseneau	Project is close-out/report writing for 94039. See 94039 for status.		94039
95041	Introduced Predator Removal from Islands - Follow-up Surveys	DOI (FWS) Bailey	Final report accepted by Chief Scientist; not yet at OSPIC.	Byrd, G.V., E.P. Bailey, and W. Stahl. 1996. Introduced predator removal from islands. USFWS/DOI. Homer, AK	
95043B	Carry-forward: Cutthroat and Dolly Varden Rehabilitation in Western PWS	USFS Wedemeyer	Annual report peer reviewed; not yet at OSPIC.		96043B
95052	Community Interaction/Use of Traditional Knowledge	ADFG Miraglia	Final report submitted to Chief Scientist May 1, 1996; under peer review.		96052
95058	Landowner Assistance Program	ADFG Kuwada	No report required.		
95060	Spruce Bark Beetle Impacts	ADEC Piper	Draft final report submitted to Chief Scientist October 31, 1996; under peer review.		
95064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in PWS	ADFG Frost	Annual report peer reviewed; undergoing format review at OSPIC.	Population model for harbor seals. Initial results of fatty acid analysis indicate this technique has great use for distinguishing differences in seal diets.	96064

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency/ P.I.</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
95074	Herring Reproductive Impairment	NOAA Carls	Draft final report (which will include five chapters submitted as manuscripts) peer reviewed and returned to PI for revision December 11, 1996.	Carls, M.G., et al. Disease, mortality, and bioaccumulations of hydrocarbons in pre-spawn herring. Carls, M.G., et al. Impact of exposure of adult pre-spawn herring to weathered crude oil on subsequent progeny. Thomas, R.E., et al. Mixed function oxidase induction in pre- and post-spawn herring by petroleum hydrocarbons. Carls, M.G., et al. Effects of incubating herring eggs in water contaminated with weathered crude oil. Johnson, S.W., et al. Reproductive success of Pacific herring in PWS six years after EVOS.	Final report funded under 96074.
95076	Effects of Oiled Incubation Substrate on Survival and Straying of Wild Pink Salmon	NOAA Wertheimer	Annual report (which includes results of Project 95191B) peer reviewed; available to public at OSPIC.	Wertheimer, A. C., et al. 1996. Effects of oiled incubation substrate on straying and survival of wild pink salmon. Auke Bay Fisheries Lab, NMFS, NOAA. Juneau, AK.	96076
95086C	Herring Bay Monitoring and Restoration Studies	ADFG Highsmith, UAF	Draft final report (which includes results of 93039) peer reviewed; returned to PI for revision December 12, 1996.		Final report writing funded under 96086.
95089	Information Management System	ALL Fries	No report required.		
95090	Mussel Bed Restoration and Monitoring in PWS and Gulf of Alaska	NOAA Babcock	FINAL REPORT OVERDUE; now expected March 1997.	Babcock, M. and G. Irvine.	Final report funded under 96090.
95093	PWSAC: Restoration of Pink Salmon Resources and Services	ADFG Ferren, PWSAC	Project terminated; no report required.		
95100	Administration, Science Management and Public Information	All	No report required.		

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95102-CLO	Closeout: Murrelet Prey and Foraging Habitat in Prince William Sound	DOI (FWS) Kuletz	Project is close-out/report writing for 94102. See 94102 for status.	Kuletz, K.J., et al. 1995. Marbled murrelet foraging patterns in PWS, Alaska.	94102
95106	Subtidal Monitoring: Eelgrass Communities	ADFG Jewett, UAF	Draft final report peer reviewed; returned to PI for revision December 16, 1996.		Final report writing funded under 96106.
95110-CLO	Closeout: Habitat Protection and Acquisition	ADNR Fries	No report required.		
95115	Sound Waste Management Plan	ADEC PWSEDC	Final report available to public at OSPIC.		
95117-BAA	Harbor Seals and EVOS: Blubber and Lipids as Indices of Food Limitation	NOAA Castellini, UAF	Draft annual report submitted to Chief Scientist September 15, 1996; under peer review.		Continued under 96001.
95121	Fatty Acid Signatures of Selected Forage Fish Species in PWS	NOAA Worthy, Texas A&M University	Draft report not yet submitted to Chief Scientist. (The draft submitted to NOAA on January 23, 1997 was deemed incomplete and so is being reworked.)		
95126	Habitat Protection and Acquisition Support	ADNR Fries	No report required.		
95126A	Carry-forward: Habitat Protection and Acquisition Support	ADNR Fries	No report required.		
95127	Tatitlek Coho Salmon Release Program	ADFG Kompkoff, Tatitlek IRA	No report required (project was NEPA only).		96127

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95131	Clam Restoration (Nanwalek, Port Graham, Tatitlek)	ADFG Brown-Schwab lenberg, CRRC	Annual report peer reviewed July 1, 1996; not yet at OSPIC.		96131
95137-CLO	Closeout: Prince William Sound Salmon Stock Identification and Monitoring Studies	ADFG Fried	Project is close-out/report writing for 93068 and 94137. See 94137 for status.		93068, 94137
95138	Elders/Youth Conference	ADFG Simeone	Conference proceedings available to public at OSPIC.	Braund, S., et al. Community conference on subsistence and the oil spill: summary report. Oct. 1995.	
95139	Wild Stock Supplementation Workshop	ADFG Hauser	No report required. (Summation memo prepared by Chief Scientist is on file in Anchorage Restoration Office.)		
95139A1	Carry-forward: Salmon Instream Habitat and Stock Restoration -- Little Waterfall Creek Barrier Bypass	ADFG Honnold	Annual report submitted to Chief Scientist June 13, 1996; under peer review.		96139A1
				Construction complete in field November 1995.	
95139A2	Port Dick Spawning Channel	ADFG Dudiak	No report required (project was NEPA only).		
95139B	Closeout: Otter Creek/Shrode Creek Instream Restoration	USFS Olson	Project is close-out/report writing for 94139B1 and 94139B2. See 94139B1 and 94139B2 for status.		94139B1, 94139B2
95139C1	Montague Riparian Rehabilitation	USFS Hodges	Annual report peer reviewed; not yet at OSPIC.		96139C1
95139C2	Carry-forward: Salmon Instream Habitat and Stock Restoration -- Lowe River	ADFG	No report required (project canceled).		

<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency/ P.I.</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
95163A	Abundance and Distribution of Forage Fish and their Influence on Recovery of Injured Species (interim funding)	NOAA Duffy (NOAA), Willette (ADFG)	NOAA: No report required. Project is funding for planning of integrated APEX/ ecosystem project. ADFG: Project is funding for close-out/report writing for 94163; see 94163 for status of annual report.		
95163A1	Abundance and Distribution of Forage Fish and their Influence on Recovery of Injured Species (APEX)	NOAA Haldorson	Integrated annual report submitted to Chief Scientist June 15, 1996; under peer review. Available to public at OSPIC.		96163
95163B	Foraging of Seabirds (APEX)	DOI Ostrand	See 95163A1.		96163
95163C	Fish Stomach Contents Analysis (APEX)	NOAA Sturdevant	See 95163A1.		96163
95163D	Tufted Puffin Foraging and Reproductive Success (APEX)	DOI Piatt	Draft final report submitted to Chief Scientist January 29, 1997; under peer review. NOTE: Report was to be a chapter of the 95163 integrated report (see 95163A1), but it was not submitted at the time of the integrated report. This is a final report because this component of APEX did not continue past FY 95.		See 96163.
95163E	Reproduction and Foraging of Black-legged Kittiwakes (APEX)	DOI (FWS) Irons	See 95163A1.		96163
95163F	Factors Affecting Recovery of PWS Pigeon Guillemot Populations (interim funding)	DOI (FWS) Hayes	Project is close-out/report writing for 94173. See 94173 for status.		94173
95163F1	Reproduction of Pigeon Guillemots Populations in PWS in Relation to Food (APEX)	DOI Hayes	See 95163A1.		96163

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95163G	Seabird Energetics (APEX)	NOAA Roby	See 95163A1.		96163
95163I	Seabird/Forage Fish Interaction: Program Management and Integration	DOI (FWS) Duffy	See 95163A1.		96163
95163J	Barren Islands Seabird Studies (APEX)	DOI Roseneau	See 95163A1.		96163
95163K	Using Predatory Fish to Sample Forage Fish (APEX)	DOI Roseneau	See 95163A1.		96163
95163L	Historic Review of Ecosystem Structure in PWS/Gulf of Alaska and Abundance/Distribution of Forage Fish in Barren Islands (APEX)	DOI Piatt	See 95163A1.		96163
95165	PWS Herring Genetic Stock Identification	ADFG J. Seeb	Annual report peer reviewed; available to public at OSPIC.		96165
95166	Herring Natal Habitats	ADFG Carpenter, Willette	Annual report peer reviewed June 10, 1996; returned to PI for revision.	Results indicate an improvement in the age structure among the age 3 and 4 herring to suggest the beginnings of recovery. Results are being compared with results of the herring disease study.	96166
95191A	Investigating and Monitoring Oil Related Egg and Alevin Mortalities	ADFG J. Seeb, Bue	Results will be presented in two reports: (1) Field component: Annual report peer reviewed; available to public at OSPIC. (2) Genetics component: Annual report (in form of manuscript) submitted to Chief Scientist October 3, 1996; under peer review.	(1) Bue, B. Injury to pink salmon embryos in Prince William Sound: field monitoring (2) Seeb, J. Laboratory examination of oil-related embryo mortalities that persist in pink salmon populations in Prince William	96191A

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95191B	Injury to Salmon Eggs and Pre-emergent Fry Incubated in Oiled Gravel (Laboratory Study)	NOAA Rice	Results of this project are included in the report being prepared under 95076. See 95076 for status.		96191B
95199-CLO	Institute of Marine Science - Seward Improvements EIS	ADFG Sundberg	No report required.	Phase I (marine) construction completed. Phase II (building) construction bidding process underway. Private financing package assembled. Awaiting bid results and bond sale to proceed to construction, scheduled for May 8, 1996.	
95244	Seal and Sea Otter Cooperative Subsistence Harvest Assistance	ADFG Fall	FY 95 findings included in annual report submitted under 94244. See 94244 for status.		94244, 96244
95255	Kenai River Sockeye Restoration	ADFG L. Seeb, Tarbox	Annual report submitted to Chief Scientist June 14, 1996; under peer review.	Analysis of allozyme and mtDNA data revealed a substantial amount of genetic diversity among populations, suggesting significant local adaptation. Simulations indicated that Kenai River populations can be identified in mixtures. Results are currently being used in management.	96255
95258	Sockeye Salmon Overescapement (Kenai/Kodiak)	ADFG Schmidt	Annual report submitted to Chief Scientist May 13, 1996; under peer review.	Developed model which predicts fall fry production from seasonal copepod abundance. Established a single year shift in density-dependent response because of two-year life history of dominant copepod.	96258

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency/ P.I.</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
95259	Restoration of Coghill Lake Sockeye	ADFG Kyle	Revised draft of annual report submitted to Chief Scientist December 11, 1996.	Nutrient enrichment of Coghill Lake shows positive effects on lake productivity. Mean total phosphorus concentration increased by 22% after enrichment; mean chlorophyll concentration (algal biomass) increased by 250%, which improved quality of phytoplankton. Rearing sockeye fry were larger in 1995 compared to previous years. The 1995 smolt outmigration estimate of 1.6 million was the highest recorded since sampling began in 1989.	96259
95266	Experimental Shoreline Oil Removal	ADEC Piper	Final report accepted by Chief Scientist. Approved by OSPIC; copies being made.		
95272	Chenega Chinook Release Program	ADFG Lindley, PWSAC	Annual report peer reviewed; available to public at OSPIC.		96272
95279	Subsistence Restoration Project - Food Safety Testing	ADFG Miraglia	Draft final report peer reviewed; returned to PI for revision November 19, 1996.	The emphasis in 1995 was to establish a system whereby subsistence users could get samples of abnormal resources to biologists and pathologists for study, who would then report findings back to subsistence users. Training sessions were held in 19 spill-impacted communities.	
95285-CLO	Closeout: Subtidal Sediment Recovery Monitoring	NOAA O'Clair	Final report submitted to Chief Scientist May 9, 1996; under peer review.		94285
95290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated with the <i>Exxon Valdez</i> Oil Spill	NOAA Short	Results incorporated into report being prepared under ST8. See ST8 for status.		96290

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<u>Project No.</u>	<u>Project Title</u>	<u>Lead Agency/ P.I.</u>	<u>Report Status</u>	<u>References and Results</u>	<u>Related Projects</u>
95320A	Salmon Growth and Mortality	ADFG Willette	Annual report, which integrates results of subprojects A, E, G, H, I(2), J, K, M, N, Q, T, U, and Y submitted to Chief Scientist May 20, 1996; under peer review. NOTE: Separate reports, in addition to the integrated report, were submitted for subprojects A, K, and Q.	Results indicate that predation on juvenile pink salmon by pollack and seabirds is less than had been forecast. This suggests predators may have caused significant mortality to juvenile pinks in nearshore habitats or that the pollack predation rate was underestimated if the feeding behavior or distribution of pollack was different than expected.	Integrated into 96320E in FY 96.
95320B	PWS Pink Salmon Stock Identification and Monitoring (CWT)	ADFG Joyce	Annual report peer reviewed; available to public at OSPIC.	Stock separation was complicated by non-standard marking rates for SEA project releases at AFK and WHN hatcheries. Also high tag loss rate at Cannery Creek hatchery biased results. In-season adjustments were made to compensate for the above mentioned biases. Solomon Gulch, Cannery Creek, wild stocks, WHN, and AFK hatcheries were the highest contributors to the PWS pink salmon return respectively.	96186
95320C	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon in PWS	ADFG Joyce	Annual report peer reviewed; available to public at OSPIC.	Otolith thermal marks were applied on 100% of hatchery incubated pink salmon. The marks are distinct and blind tests have indicated that otolith lab personnel can identify hatchery fish from mixtures of hatchery and wild stocks. Preliminary results indicate a successful marking project.	96188
95320D	PWS Pink Salmon Genetics	ADFG J. & L. Seeb	Annual report peer reviewed; returned to PI for revision July 1, 1996. [NOTE: Report also includes results from 94320D.]	Allozyme and mtDNA analyses showed genetic differences between upstream and tidal collections within the same streams and among regions within PWS. These results support managing and restoring pink salmon on a regional basis rather than as a single panmictic population.	96196

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95320E	Juvenile Salmon and Herring Integration	ADFG Willette	See 95320A.	Movement and diet overlap for age zero pink salmon have been studied and compared.	96320
95320G	Phytoplankton and Nutrients	ADFG McRoy & Eslinger, UAF	See 95320A.	First complete data sets for the phytoplankton and nutrient cycles.	96320
95320H	Role of Zooplankton in the PWS Ecosystem	ADFG Cooney, UAF	See 95320A.		96320
95320I	Isotope Tracers - Food Web Dependencies in PWS (Fish, Marine Mammals, and Birds)	ADFG Schell	Annual report peer reviewed; available to public at OSPIC.	Schell, D.M. and A. Hiron. 1996. Isotope ratio studies of marine mammals in PWS. ADF&G, Habitat and Restoration Division, Anchorage, AK. Stable isotope analyses were conducted on a wide suite of samples for this project and associated SEA isotope studies. Preliminary data show geographic gradients in isotope ratios useful in separating Gulf of Alaska from PWS energy sources. These are now being used as biological markers for fishery studies and for estimation of harbor seal feeding habitats.	Continued as 96170.
95320I(2)	Isotope Tracers - Food Webs of Fish	ADFG Kline, UAF	See 95320A.		
95320J	Information Systems and Model Development	ADFG Patrick, PWSSC	See 95320A.		96320

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95320K	PWSAC: Experimental Fry Release	ADFG Ferren & Lindley, PWSAC	Annual report submitted to Chief Scientist. March 20, 1996; under peer review. Available to public at OSPIC.		96320
The fish were successfully released on schedule.					
95320M	Observational Physical Oceanography in PWS and the Gulf of Alaska	ADFG Vaughan, PWSSC	See 95320A.		96320
95320N	Nearshore Fish	ADFG Thomas, PWSSC	See 95320A.		96320
Fish are typically light sensitive because of visibility by potential predators. In summer 1995 we noticed a trend in which pollock migrated downward with sunlight, and in fall 1995 we noticed a trend in which herring migrated towards the shore with both sunlight and moonlight. For better acoustic measurement of fish, one should perform herring surveys at night and during a new moon because they will more likely be in the open water, but perform pollock surveys in the day because they are farther from the surface.					
95320Q	Avian Predation on Herring Spawn	USFS Bishop	Draft final report submitted to Chief Scientist December 4, 1996. [NOTE: Some results also included in integrated SEA report.]		96320Q
Documented avian abundance and distribution in spawn areas. Glaucous-winged gulls were the most numerous herring spawn predator. Analyzed stomach contents of the five most abundant avian species foraging in spawn areas in northern Montague Island. Herring spawn occurred in 100% of glaucous-winged gulls, mew gulls, and surf scoters, and in 75% of surfbirds and 69% of turnstones. Estimate that glaucous-winged gulls, mew gulls, surf scoters, and black turnstones obtained 99- 100% of total daily energy from spawn.					

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95320S	Disease Impacts on PWS Herring Populations (competitive solicitation under State of Alaska two-step, RFQ-RFP process)	ADFG Hauser	Annual report submitted to Chief Scientist April 5, 1996; under peer review. [NOTE: Report addendum on plasm lgm submitted May 3, 1996.]		96162 Focal skin reddening or ulcers were more prevalent in spawning Pacific herring from PWS (2.8%) than from Sitka Sound (1.3%), but less prevalent at both sites than in PWS in 1994 (8.4%). Ichthyophonus prevalence in PWS spawning fish in 1995 (29%) was same as 1994 and same as Sitka Sound in 1995 (26%). VHS virus was not isolated from any spawning fish in PWS or Sitka Sound, but was isolated from 6.2% of prspawning fish from PWS. Lab experiments revealed that both VHS and Ichthyophonus can kill Pacific herring.
95320T	Juvenile Herring Growth and Habitat Partitioning	ADFG Norcross	See 95320A.		96320
95320U	Somatic and Spawning Energetics of Herring/Pollock	ADFG Paul, UAF	See 95320A.		96320
95320Y	Variation in Local Predation Rates on Hatchery-Released Fry	ADFG Scheel, PWSSC	See 95320A. [NOTE: This component of SEA was funded for close-out/report writing only in FY 96.]		96320 Estimate that from 1.1-2.4% of the 241.7 million pink and chum salmon fry released into Lake Bay (Esther Island, PWS) in 1995 were consumed by seabirds in and near Lake and Quill Bays in the period April-June 1995. Black-legged kittiwakes marbled murrelets were the most abundant avian predators on these fry.
95417	Carry-forward: Waste Oil Disposal Facilities	ADEC	No report required (project canceled).		
95422-CLO	Closeout: Restoration Plan EIS/Record of Decision	USFS	No report required.		

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95424	Restoration Reserve	All All	No report required.		
95427	Harlequin-Duck Recovery Monitoring	ADFG Rosenberg	Annual report accepted by Chief Scientist; undergoing format review at OSPIC.	Males comprised a significantly greater proportion of the total population in western PWS during the first spring survey. Compared to eastern PWS, in western PWS the ratio of paired to non-paired females was significantly lower, males comprised a significantly greater proportion of the total population during the fall, a greater proportion of flightless females was observed in late July, and the influx of females was delayed. The influx of males was accelerated in eastern PWS. No broods were observed in PWS.	96427
95428-CLO	Closeout: Subsistence Planning Project	ADFG Fall	FY-95 findings included in annual report submitted under 94428. See 94428 for status.		94428
95505B	Data Analysis for Stream Habitat	USFS Olson	Final report available to public at OSPIC. Report also includes findings from 93051 and 94505.	Olson, R.A., 1995. Use of aerial photograph, channel-type interpretations to predict habitat availability in small streams, USDA, Forest Service, Chugach N.F., Anchorage, AK	93051, 94505

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96001	Recovery of Harbor Seals from EVOS: Condition and Health Status	ADFG	Annual report being drafted.		
96007A	Archaeological Index Site Monitoring	ADNR	Annual report being drafted.		
96007B	Site Specific Archaeological Restoration	USFS	Project is report-writing funds only for 95007B. See 95007B for status.		
96009D	Survey of Octopuses in Intertidal Habitats	USFS	Final report being drafted (report writing funded under 97009D).		
96012A-BAA	Comprehensive Killer Whale Investigation in Prince William Sound, Alaska	NOAA	Annual report being drafted.		
96025	Mechanism of Impact and Potential Recovery of Nearshore Vertebrate Predators	DOI	Annual report being drafted.		
96027	Kodiak Archipelago Shoreline Assessment: Monitoring Surface and Subsurface Oil	ADEC	Project is report-writing funds only for 95027. See 95027 for status.		
96031	Development of a Productivity Index to Monitor the Reproductive Success of Marbled and Kittlitz's Murrelets in Prince William Sound, Alaska	DOI	Project is report-writing funds only for 95031. See 95031 for status.		
96038	Publication of Seabird Restoration Workshop	DOI	Project is write-up funds only for 95038. See 95038 for status.		
96043B	Monitoring of Cutthroat Trout and Dolly Varden Habitat Improvement Structures	USFS	Annual report being drafted.		
96048-BAA	Historical Analysis of Sockeye Salmon Growth Among Populations Affected by Overescapement in 1989	NOAA	Final report being drafted.		
96052	Community Involvement & Use of Traditional Knowledge	ADFG/Miraglia	Annual report being drafted.		Began as 95052

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96064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in Prince William Sound	ADFG	Annual report being drafted.		
96074	Herring Reproductive Impairment	NOAA	Annual report being drafted.		
96076	Effects of Oiled Incubation Substrate on Straying and Survival of Wild Pink Salmon	NOAA	Annual report being drafted.		
96086	Herring Bay Monitoring and Restoration Studies	ADFG	Project is close-out/report-writing funds only for 95086C. See 95086C for status.		
96090	Mussel Bed Restoration and Monitoring	NOAA	Project is report writing funds only for 95090. See 95090 for status.		
96101	Removal of Introduced Foxes From Islands	DOI	Project is report-writing funds only for 95101. See 95101 for status.		
96106	Subtidal Monitoring: Eelgrass Communities	ADFG	Project is close-out/report-writing funds only for 95106. See 95106 for status.		
96115	Sound Waste Management Plan	ADEC	Project is close-out only for 95115. See 95115 for status.		
96127	Tatitlek Coho Salmon Release	ADFG/Moore	Annual report being drafted.		Began as 95127.
96131	Chugach Native Region Clam Restoration	ADFG/Moore	Annual report being drafted.		
96139A1	Salmon Instream Habitat and Stock Restoration - Little Waterfall Barrier Bypass Improvement	ADFG	Annual report being drafted.		
96139A2	Spawning Channel Construction Project Port Dick Creek, Lower Cook Inlet	ADFG	Annual report being drafted.		
96139C1	Montague Riparian Rehabilitation Monitoring Program	USFS	Final report being drafted (report writing funded under 97139C1).		

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96142-BAA	Status and Ecology of Kittlitz's Murrelet in Prince William Sound	NOAA	Annual report being drafted.		
96144	Common Murre Population Monitoring	DOI	Annual report being drafted.	Roseneau, D.G., A.B. Kettle, and G.V. Byrd. 1997. Common murre population monitoring. Found no evidence that common murre populations have begun to increase at Nord Island, and no significant change at East Amatuli Light Rock although there was a hint of a positive trend. The only data that demonstrated significant increases were from two plots, one on East Amatuli Light Rock and one on the main island.	93049, 94049, 95/96163J, 96163M
96145	Cutthroat Trout and Dolly Varden: the Relation Among and Within Populations of Anadromous and Resident Forms	USFS	Annual report being drafted.		
96149	Archaeological Site Stewardship	ADNR	Annual report being drafted.		
96154	Comprehensive Community Plan for Restoration of Archaeological Resources in PWS and Lower Cook Inlet	USFS	Final report submitted to Restoration Office. Not yet at OSPIC.		
96159	Surveys to Monitor Marine Bird Abundance In Prince William Sound During Winter and Summer 1996	DOI	Final report being drafted (report writing funded under 97159).		
96161	Differentiation and Interchange of Harlequin Duck Populations Within N. Pacific Region	DOI	Annual report being drafted.	Preliminary genetics results available from all areas (inclusive site-specific differentiation incomplete). Birds banded at Katmai (N=39) and Kodiak (N=313).	96025, 96427

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96162	Investigations of Disease Factors Affecting Declines of Pacific Herring Populations in Prince William Sound, AK	ADEG	Annual report being drafted.		
96163	APEX: Apex Predator Ecosystem Experiment in Prince William Sound and the Gulf of Alaska	NOAA DOI			
96163A	Abundance and Distribution of Forage Fish and their Influence on Recovery of Injured Species	NOAA	Annual report being drafted.		
96163B	Foraging of Seabirds	DOI	See 96163A.		Although walleye pollock made up a large portion of the forage biomass, few seabirds were associated with this species. Black-legged kittiwakes, pigeon guillemots, and marbled murrelets were observed in shallow water near shore. Glaucous-winged gulls and tufted puffins were observed significantly further from shore.
96163C	Fish Diet Overlap Using Fish Stomach Content Analysis	NOAA	See 96163A.		
96163D	Distribution of Forage Fish as Indicated by Puffin Diet Sampling	DOI	Project is report-writing funds only for 95163D.		
96163E	Black-legged Kittiwakes as Indicators of Forage Fish Availability	DOI	See 96163A.		
96163F	Factors Affecting Recovery of Pigeon Guillemot Populations	DOI	See 96163A.		
96163G	Diet Composition, Reproductive Energetics, and Productivity of Seabirds	NOAA	See 96163A.		
96163I	APEX Planning and Project Leader	DOI	See 96163A.		

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96163J	Barren Islands Seabird Studies	DOI	See 96163A.	Roseneau, D.G., A.B. Kettle, and G.V. Byrd. 1997. Barren Islands seabird studies. At East Amatuli Island, productivity of common murres and black-legged kittiwakes was high and normal, respectively, while productivity of tufted puffins was low. Growth rates of kittiwake chicks was normal, but growth of tufted puffin chicks was very slow. Diets of murre and puffin chicks were similar to those of 1995 and 1996; diets of kittiwake chicks in 1996 contained more sand lance than during the previous two years. Common murre nesting chronology was earlier than in 1995, continuing a trend that started in 1991.	96144 96163M 93/94039
96163K	Using Predatory Fish to Sample Forage Fish	DOI	Project is report-writing funds only for 95163K. See 95163K for status.		
96163L	Historical Review of Ecosystem Structure in the PWS/GOA Complex	DOI	See 96163A.		
96163M	Lower Cook Inlet Study	DOI	See 96163A.		
96163N	Black-legged Kittiwake Feeding Experiment	DOI	See 96163A.		
96163O	Statistical Review	DOI	See 96163A.		
96163P	Sand Lance Hydrocarbon Exposure	NOAA	Draft final report submitted to Chief Scientist January 29, 1997; under peer review. (NOTE: These results will also be included in summary form in the integrated 96163 annual report.)		

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96165	Genetic Discrimination of Prince William Sound Herring Populations	ADFG	Annual report being drafted.		
96166	Herring Natal Habitats	ADFG	Annual report being drafted.		
96170	Isotope Ratio Studies of Marine Mammals in Prince William Sound	ADFG	Annual report being drafted.		
96180	Kenai Habitat Restoration & Recreation Enhancement Project	ADNR	Annual report being drafted.		
96186	Coded Wire Tag Recoveries From Pink Salmon in Prince William Sound	ADFG	Annual report being drafted.		
96188	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon in Prince William Sound	ADFG	Annual report being drafted.		
96190	Construction of a Linkage Map for the Pink Salmon Genome	ADFG	Annual report being drafted.		
96191A	Oil-Related Embryo Mortalities in PWS Pink Salmon Populations	ADFG	Annual report being drafted.		
96191B	Injury to Salmon Eggs and Pre-emergent Fry Incubated in Oiled Gravel (Laboratory Study)	NOAA	Results of this project will be presented in the report being prepared under 96076. See 96076 for status.		
96195	Pristane Monitoring in Mussels and Predators of Juvenile Pink Salmon & Herring	NOAA	Annual report being drafted.		
96196	Genetic Structure of Prince William Sound Pink Salmon	ADFG	Annual report being drafted.		
96210	Prince William Sound Youth Area Watch	ADFG	Annual report submitted to Chief Scientist November 5, 1996; under peer review.		

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96214	Documentary on Subsistence Harbor Seal Hunting in PWS	ADFG	No report required; copy of video will be provided to OSPIC.		
96220	Eastern PWS Wildstock Salmon Habitat Restoration	USFS/Schmid	Annual report being drafted.		
96222	Chenega Bay Salmon Restoration -- Anderson Creek	USFS/Murphy	Project canceled; no report required.		
96225	Port Graham Pink Salmon Subsistence Project	ADFG/Moore	Annual report being drafted.		
96244	Community-Based Harbor Seal Management and Biological Sampling	ADFG/Fall	Annual report being drafted.		Began as 94244, continued as 95244.
96255	Kenai River Sockeye Salmon Restoration	ADFG	Final report being drafted (report writing funded under 97255).		
96256	Columbia and Solf Lakes Sockeye Salmon Stocking	USFS	Solf Lake: Annual report being drafted. Columbia Lake: Feasibility report submitted to Restoration Office; under review.		
96258A	Sockeye Salmon Overescapement Project	ADFG	Final report being drafted (report writing funded under 97258A).		
96259	Restoration of Coghill Lake Sockeye Salmon	ADFG	Final report being drafted (report writing funded under 97259).		
96272	Chenega Chinook Release Program	ADFG	Annual report being drafted.		
96290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance	NOAA	No report required.		

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96291	Chenega-area Shoreline Residual Oiling Reduction	ADEC	Project was funded as a two-year capital activity; final report will be submitted at completion of project.		
96320	Sound Ecosystem Assessment (SEA)	ADFG			
96320E	Salmon and Herring Predation	ADFG	Annual report being drafted.		
96320G	Phytoplankton and Nutrients	ADFG	See 96320E.		
96320H	Zooplankton in the PWS Ecosystem	ADFG	See 96320E.		
96320I	Isotope Tracers - Food Webs of Fish	NOAA	See 96320E.		
96320J	Information Systems and Model Development	NOAA/ADFG	See 96320E.		
96320K	PWSAC: Experimental Fry Release	ADFG	See 96320E.		
96320M	Physical Oceanography in PWS	NOAA/ADFG	See 96320E.		
96320N	Nekton/Plankton Acoustics	NOAA/ADFG	See 96320E.		
96320Q	Avian Predation on Herring Spawn	USFS	Project is report-writing funds only for 95320Q. See 95320Q for status.		
96320R	SEA Trophodynamic Modeling and Validation Through Remote Sensing	ADFG	See 96320E.		
96320T	Juvenile Herring Growth and Habitat Partitioning	ADFG	See 96320E.		
96320U	Energetics of Herring and Pollock	ADFG	See 96320E.		
96320Y	Variation in Local Predation Rates on Hatchery-Released Fry	ADFG	See 96320E.		

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96320Z1	Synthesis and Integration	ADFG	See 96320E.		
96326	Completion of NRDA MM6/Data Re-analysis	DOI	Project is report-writing funds only for MM6. See MM6 for status.		
96427	Harlequin Duck Recovery Monitoring	ADFG	Annual report being drafted.		
96507	EVOS Symposium Publication	NOAA	Project is close-out funds only for 94507. See 94507 for status.		

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97001	Recovery of Harbor Seals From EVOS: Condition and Health Status	M. Castellini/UAF	ADFG	<u>Oct - Dec:</u> UNDERWAY-Analysis and statistical study of all blood samples. DONE-Collection of archived blubber samples. UNDERWAY-Analysis of blubber water content. <u>Jan - March:</u> -Preparation of blubber samples for bomb calorimetry. -Modeling of body morphometrics. -Samples outside of PWS. <u>April - June:</u> -Analysis and statistical study of blood samples. -Collection of field samples outside of PWS. -Collection of field samples inside PWS. -Analysis of all blood samples. <u>July - Sept:</u> -Modeling of body morphometrics and blubber data. -Modeling of body condition indices.
97007A	Archaeological Index Site Monitoring	D. Reger/ADNR	ADNR	<u>April - June:</u> -Finalize arrangements for fieldwork. -Submit charcoal and sediment samples for analysis.
97007B-CLO	Site Specific Archaeological Restoration	L. Yarborough/USFS	USFS	<u>Oct - Dec:</u> UNDERWAY -Prepare manuscript for peer-review professional journals. <u>Jan - March:</u> UNDERWAY -Prepare presentations for Oil Spill communities. -Presentations/discussions in Oil Spill communities. SCHEDULED FOR PRESENTATION 4/6/97 -Prepare paper for SAA.

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97009D-CLO	Survey of Octopuses in Intertidal Habitats	D. Scheel/Prince William Sound Science Center	USFS	<u>Sept - Dec:</u> DONE -Analyses from summer field work. <u>Jan - Mar:</u> UNDERWAY -Preparation of final report. UNDERWAY -Draft manuscripts for submission to professional journals.
97012-BAA	Comprehensive Killer Whale Investigation in Prince William Sound	C. Matkin/North Gulf Oceanic Society	NOAA	<u>Sept - Dec:</u> UNDERWAY -Data analysis. <u>Jan - March:</u> -Convert prey data to geographic information system format. -Begin draft of manuscript on area use. <u>April - June:</u> -Killer whale biopsy emphasis fieldwork. -Analyze correlations with prey. -Analyze winter recordings from remote hydrophone. <u>July - Sept:</u> -Arrange for Restoration and Personal Use licenses from Chenega Corporation. -Analyze previous year's recordings. -Replace hydrophone. -Begin draft of manuscript on geographic distributions of foraging behaviors. -Killer whale monitoring emphasis field work. -Killer whale biopsy emphasis field work. -Presentations and interviews with elders at Chenega, Cordova, and Tatitlek. -Set up receiving stations in Chenega and Port San Juan. -Train volunteers and technicians who will maintain batteries.

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97025	Mechanisms of Impact and Potential Recovery of Nearshore Vertebrate Predators (NVP)	L. Holland-Bartels, et al/NBS-DOI	DOI	<u>Sept - Dec:</u> DONE -Sea otter: Aerial survey of western Prince William Sound. DONE -Harlequin: Continue survival monitoring, skiff surveys, and collections of Barrow's goldeneyes. DONE -Project meeting to discuss field season outcomes and develop/revise proposed approach. <u>Jan - March:</u> -Invertebrate predator: Complete sampling of all study sites. -Harlequin: Continue survival monitoring, skiff surveys, and collections of Barrow's goldeneyes. <u>April - June:</u> -Pigeon guillemot: Active nest surveys, blood sampling, prey sampling, and nest monitoring. -Sea otter: Prey selection and foraging success. -River otter: Live trapping for morphometrics and tissue sampling. -Sea otter: Beach-cast carcass survey. -Avian co-predators: Boat surveys, collections, and behavioral observations. <u>July - Sept:</u> -Pigeon guillemot: Active nest surveys, blood sampling, prey sampling, and nest monitoring. -Sea otter: Aerial survey of Prince William Sound; capture for morphometrics and tissue collection. Prey selection and foraging success. -Mussel/clam/urchin/fish/duck food and invertebrate predators: Vessel charter to sample study areas. -Avian co-predators: Boat surveys and behavioral observations. -River otter: Latrine sites located, sampled, and monitored.

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97026-CLO	Report Writing: Integration of Microbial and Chemical Sediment Data	J. Braddock/UAF	ADEC	<u>Oct - Dec:</u> -Funding approved 12/6/96. <u>Jan - March:</u> UNDERWAY -Complete final report. -Prepare manuscript for publication.
97043B	Monitoring of Cutthroat Trout and Dolly Varden Habitat Improvement Structures	D. Gillikin/USFS	USFS	<u>August:</u> -Inspect and measure effects of installed structures. -Conduct population estimates of primary units.

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97052A	Community Involvement	P. Brown/Chugach Regional Resources Commission	ADF&G	<u>Oct - Dec: (Spill Area-Wide Coordinator)</u> DONE -Prepare subcontracts with communities DONE -Conduct training/orientation for facilitators DELAYED -Send activity report to facilitators twice each month SOME -Receive report from each facilitator at end of each month UNDERWAY -Receive resource inventory from each facilitator UNDERWAY -Compile/distribute resource inventories to PIs Contact PIs who have community involvement component in FY 97 projects to assist in implementation SOME -Attend Trustee Council and RWF meetings <u>Oct - Dec: (ADF&G/Subsistence Division)</u> DONE -Renew cooperative agreement with CRRC <u>Jan - Mar: (Spill Area-Wide Coordinator)</u> Assist/coordinate assistance in preparing project proposals Send activity report to facilitators twice each month Receive report from each facilitator at end of each month Attend Trustee Council and RWF meeting <u>Jan - Mar: (ADF&G/Subsistence Division)</u> Assist communities in preparing project proposals <u>April - June: (Spill Area-Wide Coordinator)</u> Coordinate facilitators' review of FY 98 proposals Recommendations to Exec. Dir. regarding TEK and community involvement in FY 98 proposals Send activity report to facilitators twice each month Receive report from each facilitator at end of each month Attend Trustee Council and RWF meetings <u>July - Sept: (Spill Area-Wide Coordinator)</u> Send activity report to facilitators twice each month Receive report from each facilitator at end of each month Attend Trustee Council and RWF meetings

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97052B	Traditional Ecological Knowledge	P. Brown-Schwalenberg/CRRC	ADFG	<u>Oct - Dec: (ADF&G/Subsistence Division)</u> DONE - Renew cooperative agreement with CRRC <u>Oct - Dec: (CRRC)</u> DONE - Establish TEK Advisory Group DONE (HIRED 2) - Hire TEK Specialist DONE IN JANUARY - TEK Specialist contact PIs who have TEK components in their FY 97 projects regarding implementation <u>Jan - March: (ADF&G/Subsistence Division)</u> Complete preparation of reference guide to existing TEK <u>Jan - March: (CRRC)</u> TEK Specialist contact PIs regarding including TEK in FY 98 proposals <u>April - June: (CRRC)</u> TEK Specialist make recommendations to Executive Director regarding FY 98 proposals

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97064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in PWS	K. Frost/ADFG	ADFG	<u>Oct - Dec:</u> ONGOING -Analysis of fatty acid samples by Dalhousie. UNDERWAY -Analysis of aerial survey data. ONGOING -Analysis of genetic samples by SWFSC. DONE -Analysis of other data, modeling. UNDERWAY Analyze SLTDR data from previous year DONE -Meet with hunters about study results, distribute newsletter. -Meet with SWFSC regarding genetics analyses. <u>Jan - March:</u> -Order SLTDRs for field season. -Coordination meeting with other ADF&G harbor seal projects. -Arrange logistics (boats, airplanes, equipment, contracts, supplies). -Reserve ARGOS satellite channels. <u>April - June:</u> -Catch seals, collect samples; attach SLTDRS as decided. <u>July - Sept:</u> -Analysis of fatty acid samples by Dalhousie. -Conduct aerial surveys during molting. -Attach 6 - 12 SLTDRs, sampling.

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97076	Effects of Oiled Incubation Substrate on Straying and Survival of Wild Pink Salmon	A. Wertheimer/NOAA	NOAA	<u>Oct - March:</u> UNDERWAY -Complete contractual arrangements for labor, vessel support, fishery, and weir sampling. <u>April - June:</u> -Plumb, configure incubation matrix for breeding experiment progeny. <u>July - Sept:</u> -Set up weir, adult holding facility at LPW. -Evaluate survival in incubators to fry emigration. -Adult recovery operations at weired and unweired streams. -Collect and spawn pink salmon from P-1 and F-1 returns to LPW.
97090-CLO	Mussel Bed Restoration and Monitoring	M. Babcock/NOAA	NOAA	<u>Oct - Dec:</u> DELAYED; WRITING UNDERWAY -Submission of histopathology paper to journal. DONE -Presentation of Mussel Bed Restoration at the International Conference on Shellfish Restoration. DELAYED; WRITING UNDERWAY -Submission of survey paper to journal. DELAYED -Submission of restoration paper to journal.
97100	Administration, Science Management, and Public Information	All Trustee Council Agencies	ALL	ONGOING

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97115	Implementation of the Sound Waste Management Plan: Environmental Operations and Used Oil Management System	J. Winchester/Prince William Sound Economic Development Council	ADEC	<u>Oct - Dec:</u> DONE -Select designer for EVOS stations. UNDERWAY -Complete EVOS station designs. <u>Jan - March:</u> Develop bid documents for construction and acquisition of used oil management equipment. Solicit bids. <u>April - June:</u> Bid opening and contract award. <u>July - Sept:</u> Construction of EVOS stations and purchase of used oil equipment.
97126	Habitat Protection and Acquisition Support	C. Fries/ADNR, D. Gibbons/USFS	ADNR	<u>Oct - Dec:</u> Work proceeding on Chenega, Tatitlek, Eyak, and numerous small parcels.
97127	Tatitlek Coho Salmon Release	G. Kompkoff/Tatitlek IRA Council	ADFG	<u>April - June:</u> -Smolt transported to Boulder Bay and placed in net pens. -Smolt released into Boulder Bay <u>July - Sept:</u> -Egg take.
97131	Chugach Native Region Clam Restoration	D. Daisy/Chugach Regional Resources Commission	ADFG	<u>Sept - Dec:</u> DONE -Continue to collect broodstock. DONE -Transport to hatchery. PLUS research underway to explain why clam larvae die prior to setting. <u>Jan - Mar:</u> -Transfer 5 mm seed to hatchery nursery and FLUPSY.

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97139A1	Salmon Instream Habitat and Stock Restoration - Little Waterfall Barrier Bypass Improvement	S. Honnold/ADFG	ADFG	<u>Oct - Dec:</u> TERMINATED DUE TO HIGH WATER - Spawner abundance and distribution surveys DONE -Data summary. <u>Jan - March:</u> -Egg-to-fry survival sampling. <u>July - Sept:</u> -Juvenile coho abundance sampling. -Spawner abundance and distribution surveys.
97139A2	Port Dick Creek Tributary and Development	N. Dudiak/ADFG	ADFG	<u>Oct - Dec:</u> DONE -Monitor and measure the extent of colonization by pink and chum salmon, hydrologic parameters (water level, water temperature, stream velocity, and salinity) and proposed sedimentologic stability parameters (bedload transport, accumulated sediments, and gravel/cobble transport rates). <u>April - June:</u> -Prepare field equipment and arrange logistics. -Enumerate pink and chum salmon fry emergence. <u>July - Sept:</u> -Monitor pink and chum salmon return and colonization. -Supplement colonization if natural colonization is not adequate.
97139C1-CLO	Montague Riparian Rehabilitation Monitoring	D. Schmid/USFS	USFS	<u>April - June:</u> -Arrange logistics, hire personnel. -Examine structures. -Measure channel changes. -Collect growth data. <u>July - Sept:</u> -Analyze data. -Write final report.

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97142-BAA	Status and Ecology of Kittlitz's Murrelets in Prince William Sound.	R. Day/ABR, Inc.	NOAA	<u>Jan - March:</u> UNDERWAY -Arrange logistics (boats, equipment, etc.). <u>April - June:</u> -Conduct early-summer cruise. <u>July - Sept:</u> -Conduct late-summer cruise. -Analyze isotope ratios and stomach contents. -Key punch data and QA/QC. -Digitize, measure, and QA/QC geographic data.
97144	Common Murre Population Monitoring	D. Roseneau/DOI-FWS	DOI	<u>Oct - Dec:</u> DONE -Analyze data. DELAYED UNTIL MID-FEBRUARY-Arrange for vessel contract. DONE -Begin coordinating logistics with APEX project 96163J. <u>Jan - March:</u> -Arrange for hiring of seasonal employee. -Check/repair equipment and other gear. <u>April - June:</u> -Finalize vessel contract. -Check and update census plot booklets for the colonies. -Purchase supplies. <u>July - Sept:</u> -Collect data in Barren Islands. -Enter data.

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97145	Cutthroat Trout and Dolly Varden: Relation Among and Within Populations of Anadromous and Resident Forms	G. Reeves/USFS, Pacific Northwest Research Station	USFS	<u>Oct - Dec:</u> DONE -Renew cooperative agreement with OSU. DONE -Evaluate FY96 collections and make appropriate changes in collection sites. DONE -Conduct genetic and meristic analysis of Dolly Varden. DONE -Begin otolith microchemistry analysis. <u>Jan - March:</u> UNDERWAY -Complete genetic screening. UNDERWAY -Assemble required field gear. <u>April - June:</u> -Collect samples of anadromous cutthroat trout. -Genetic, meristic, and otolith microchemistry analysis. <u>July - Sept:</u> -Collect samples of resident cutthroat trout and Dolly Varden. -Collect samples of anadromous Dolly Varden at field sites. -Continue genetic and meristic analysis.
97149	Archaeological Site Stewardship	D. Reger/ADNR	ADNR	<u>Jan - March:</u> UNDERWAY -Compile steward reports, process film. <u>April - June:</u> -Complete review of site selection from FY96. -New site selection. -Review and training of stewards. -Complete site visits. <u>July - Sept:</u> -Complete steward monitoring of sites for season.

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97159-CLO	Surveys to Monitor Marine Bird Abundance in Prince William Sound During Winter and Summer; Report and Publication Writing	B. Agler/DOI-FWS	DOI	NO STATUS REPORT RECEIVED.... <u>Sept - Dec:</u> -Follow up on murrelet paper. -Follow up on sea otter paper. -Prepare draft report of 1996 surveys. <u>Jan - March:</u> -Attend Pacific Seabird Group Meeting, present one paper. -Attend Annual Restoration Workshop. -Submit long-term trends paper to a journal. -Submit paper on comparison of marine bird populations among three areas to journal. <u>April - June:</u> -Final Report complete. <u>July - Sept:</u> -Submit trends since the oil spill paper.
97161	Differentiation and Interchange of Harlequin Duck Populations Within the North Pacific	B. Goatcher/Katmai National Park	DOI	<u>Oct - Dec:</u> UNDERWAY -Laboratory analysis/report. DONE -Band re-sightings and recoveries at Kodiak National Wildlife Refuge and Katmai National Park <u>April - June:</u> -Procure equipment and supplies. -Refine GIS database. -Rebuild capture pens. <u>July - Sept:</u> -Harlequin duck capture. -Genetic sample collection and banding.

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97162	Investigations of Disease Factors Affecting Declines of Pacific Herring Populations in Prince William Sound	G. Marty/UC Davis; R. Kocan/Univ. Wash., C. Kennedy & A. Farrell, Simon Fraser Univ.	Y ADFG	<u>Oct - Dec:</u> DONE IN PWS ONLY; UNABLE TO LOCATE FISH IN SITKA SOUND - Collect fish samples. DONE-Scale analysis (age). -Evaluate fitness criteria in herring under varying densities without stressors. DONE - Stress studies on 0-year and 2-year herring DONE - Data analysis for disease challenge of oil-exposed juveniles with <i>Vibrio anguillarum</i>; measurement and data analysis of immunological parameters UNDERWAY - Differential white blood cell counts and plasma chemistries for fall field samples <u>Jan - March:</u> DONE; ALL SAMPLES WERE NEGATIVE FOR VIRUS AND SIGNIFICANT BACTERIA -Virology and bacteriology. -IgM assay. -Histopathology and identification of <i>Ortholinea orientalis</i>. -VEN analysis and leukocyte differential counts. <u>April - June:</u> -Statistical analysis. -Collect spring samples. -Scale analysis (age). -Plasma chemistries. -Virology and bacteriology. -VEN analysis, leukocyte differential counts, and CPK isozyme analysis. -IgM assay. -Histopathology and identification of <i>Ortholinea orientalis</i>. -Begin reproductive tests. -Analysis of single stressor data. -Stress infected SPF herring with increased densities. <u>July - Sept:</u> Evaluate temperature modulation of fitness criteria.

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97163	APEX: Alaska Predator Ecosystem Experiment in Prince William Sound and the Gulf of Alaska	D. Duffy, et al/UAA	Y NOAA	<u>Oct - May:</u> UNDERWAY - Data analysis. <u>Jan - Mar:</u> - Prepare for Restoration Workshop, APEX review, annual report, DPD submissions <u>April - June:</u> - Arrange for summer vessels <u>July - Sept:</u> -Acoustic sampling in PWS and Lower Cook Inlet. - Other field activities.
97165	Genetic Discrimination of Prince William Sound Herring Populations	J. Seeb/ADFG	ADFG	<u>Oct - Dec:</u> DONE -Evaluate 95165 contract results. DONE -Award contract for FY96 samples. DONE -Tissue sampling and archiving. <u>Jan - March:</u> -Evaluate final FY95 lab results. -Plan for 1997 sampling if needed. -Initiate technology transfer. <u>April - June:</u> -Collection of samples if needed. -Complete technology transfer. <u>July - Sept:</u> -Conclude laboratory analysis of remaining FY96 and FY97 samples.

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97166	Herring-Natal Habitats	M. Willette/ADFG	ADFG	<u>Jan - March:</u> DONE - 1996 biomass estimates - Dept. Forecast and Stock Assessment Reports. <u>April - June:</u> -BEFORE ONSET OF SPAWNING: ---Conduct acoustic survey (20 d). ---Collect AWL, fecundity, disease, genetic stock ID, and bioenergetics samples. -AFTER ONSET OF SPAWNING: ---Initiate dive surveys. ---Complete dive surveys. ---Begin lab processing of diver calibration and fecundity samples. ---Complete calibration sample processing samples. <u>July - Sept:</u> -Finalize estimate of spawning biomass.
97167-BAA	Preparation and Curation of Seabirds Salvaged from the Exxon Valdez Spill	S. Rohwer/University of Washington Burke Museum	NOAA	<u>Oct - Dec:</u> UNDERWAY -Complete all specimen preparation. UNDERWAY - Catalog all specimens and install them in the collection.

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97169	A Genetic Study to Aid in Restoration of Murrelets, Guillemots, and Murrelets to the Gulf of Alaska	V. Friesen/Queen's University, J. Piatt/DOI-FWS	DOI	<u>Oct - Dec:</u> UNDERWAY -Develop amplification primers and protocols for first three new loci. UNDERWAY -Screen available samples from murrelets and guillemots for five loci previously developed in VLF's lab. <u>Jan - March:</u> -Develop protocols for three new genes. -Screen available samples from murrelets and guillemots for five more loci. -Arrange logistics for sample collections. <u>April - June:</u> -Develop protocols for three new genes. -Screen available samples from murrelets and guillemots for five more loci. -Blood, feather and tissue samples collected from sites in Alaska. <u>July - Sept:</u> -Attend conferences. -Develop protocols for final four new genes. -Screen available samples from murrelets and guillemots for five more loci.
97170	Isotope Ratio Studies of Marine Mammals in Prince William Sound	D. Schell/UAF Institute of Marine Science	ADFG	<u>Oct - Dec:</u> UNDERWAY -Prepare and analyze isotope ratio samples collected in 1994-1996. UNDERWAY -Collect vibrissae from isotopically labeled seals and sea lions. <u>Jan - March:</u> -Synthesis and coordination for sampling in 1997. <u>April - June:</u> -Field work and sampling. -Captive animal experiments. <u>July - Sept:</u> -Analysis of samples. -Data synthesis, identification of gaps. -Manuscript preparation.

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97180	Kenai Habitat Restoration & Recreation Enhancement	M. Rutherford/ADNR, M. Kuwada/ADFG	ADNR	<u>Oct - Dec:</u> DONE -Solicit nominations for second round of projects. <u>Jan - March:</u> -Review nominations and site assessments. -Conduct evaluations with the IDT for second round nominations and EVOS parcels. -Agency coordination on cooperative agreements. -Prepare environmental compliance documents. -Conduct public review process. -Review detailed design plans. -Design and produce educational materials and signs. -Establish cooperative agreements with public landowners for second round and EVOS projects. <u>April - June:</u> -Management and oversight of project construction. -Put up signs and information displays. -Establish monitoring plots. <u>July - Sept:</u> -Inspect all project sites to check for compliance with design parameters. -Monitor revegetation sites. -Monitor public use of completed project and proposed sites for next year.

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97186	Coded Wire Tag Recoveries From Pink Salmon in Prince William Sound	T. Joyce/ADFG	ADFG	<u>Oct - June:</u> UNDERWAY-Hire personnel and order supplies UNDERWAY- Create and test computer programs and spreadsheets DONE - Data analysis UNDERWAY - Report writing <u>June:</u> -Apply tags to pink salmon fry at hatcheries <u>July - Sept:</u> -Scan catches -Recover tagged fish in harvests and brood stocks -Recover/decode tags -Provide in-season catch composition estimates by time and area
97188	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon In Prince William Sound	T. Joyce/ADFG	ADFG	<u>Oct - Dec:</u> DONE -Apply thermal marks to FY96 embryos at four pink salmon hatcheries <u>Jan - March:</u> 3-WEEK POST MARK COLLECTED AND EXAMINED -Collect samples from incubators to evaluate thermal mark quality <u>April - June:</u> -Process and evaluate otoliths <u>July - Sept:</u> -Collect otoliths, process otoliths, analyze data, make recommendations
97190	Construction of a Linkage Map for the Pink Salmon Genome	F. Allendorf/Univ. Montana	ADFG	<u>Oct - Dec:</u> UNDERWAY -Screening of DNA polymorphisms in 1996 brood-year parents and progeny to confirm haploid families. <u>Jan - Sept:</u> -Screen DNA polymorphisms to test for Mendelian inheritance and joint segregation in 1996 brood-year progeny.

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97191A	Field Examination of Oil-Related Embryo Mortalities that Persist in Pink Salmon Populations in PWS	M. Willette/ADFG J. Seeb/ADFG	ADFG	<u>Oct - Dec:</u> DONE -Embryo deposition sampling. DONE -Analysis of brood year 1995 embryo data. -Finish mtDNA analysis of 1995 collections. <u>Jan - March:</u> -Allozyme lab analyze 1996 collections. -Statistically analyze 1995 collections. <u>April - June:</u> -mtDNA analysis of 1996 collections. -Final report of FY96 results. -Allozyme lab analyze experimental matings. <u>July - Sept:</u> -Statistically analyze 1996 collections and 1995 matings. -Field collections of 1997 samples.
97194	Pink Salmon Spawning Habitat Recovery	M. Murphy/NOAA	NOAA	<u>Oct - Dec:</u> DONE -Prioritize samples for fast screening and GCMS analysis. <u>Jan - March:</u> UNDERWAY -Analyze samples for hydrocarbons. <u>April - June:</u> UNDERWAY - Data entry and statistical analysis. <u>July - Sept:</u> -Write final report on hydrocarbon concentrations.

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97195	Pristane Monitoring in Mussels	J. Short/NOAA	NOAA	<u>Oct - Dec:</u> UNDERWAY -Analyze 1996 hydrocarbon data. UNDERWAY -Revise brochure. <u>Jan - March:</u> -Plan logistics for FY97 field season. -Prepare report for public and high schools (94, 95 & 96 data). <u>April - June:</u> -Collect mussel samples. <u>July - Sept:</u> -Analyze samples for pristane and collect mussel samples.
97196	Genetic Structure of Prince William Sound Pink Salmon	J. Seeb/ADFG	ADFG	<u>Oct - Dec:</u> WAITING FOR WDFW TO RECONFIRM ALLELE MOBILITIES PRIOR TO GIVING THEM TO ADF&G -Acquire data from WDFW on 1995 collections. DONE -Finish mtDNA analysis of 1995 collections. <u>Jan - March:</u> DONE -Allozyme lab analyze 1995 collections. UNDERWAY -Statistically analyze 1995 mtDNA collections. <u>April - June:</u> -mtDNA analysis of 1995 collections. -Final report of FY96 results. UNDERWAY -Allozyme lab analyze experimental matings. -Statistically analyze 1996 collections and 1995 matings. -Field collections of 1997 samples.

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97197	Alaska SeaLife Center Fish Pass	J. Seeb/ADFG	ADFG	<u>Oct - Dec:</u> UNDERWAY -Write amendment to the existing cooperative agreement with the City of Seward. UNDERWAY -Apply for appropriate permits. UNDERWAY; EXPECT EA COMPLETION 2/28/97 - NEPA compliance. <u>Jan - March:</u> UNDERWAY -Review conceptual design of fish pass and research pool and -produce construction drawings. <u>April - June:</u> -Construct fish pass and research pool. <u>July - Sept:</u> -Write final report on construction and installation.
97210	Youth Area Watch	R. Sampson/Chugach School District	ADFG	<u>Oct - Dec:</u> DONE -Students selected for participation. DONE -Site teachers receive project training. DONE -Students receive protocol training. DONE -Sites selected for research and monitoring. <u>Jan - March:</u> -Students send information to Pls. <u>April - June:</u> -Students analyze data from projects. -Students conduct escapement counts. -Students visit Alaska SeaLife Center. -Students complete research reports for FY97. <u>July - Sept:</u> -Submission of Youth Area Watch to peer-review journal.

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97214-CLO	Documentary on Subsistence Harbor Seal Hunting in PWS	B. Simeone/ADFG	ADFG	<u>Oct - Dec:</u> UNDERWAY; 90% COMPLETE -Complete editing of draft documentary. -Community review of video (in Tatitlek). -Complete final editing. <u>Jan - March:</u> -Public screening of documentary in Tatitlek (first) and Anchorage. -Completion and distribution of documents. <u>April - June:</u> -Submission of project final report.
97220	Eastern PWS Wildstock Salmon Habitat Restoration	D. Schmid/USFS	USFS	<u>Oct - March:</u> DONE -Compile and review existing information. UNDERWAY (1 HIRED) -Recruit student interns. <u>April - June:</u> -Arrange logistics. -Install restoration log structures on Eyak Native lands. <u>July - Sept:</u> -Analysis of field data.

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97223-BAA	Analysis, Integration and Publication of Pre- and Post-Spill Data on Sea Otter Reproduction, Survival, Development, and Health	L. Rotterman and C. Monnett/Enhydra Research	NOAA	<u>November 15:</u> DELAYED BECAUSE CONTRACT NOT PREPARED UNTIL DECEMBER -Submit for publication: Health, development, and survival of sea otter pups and weanlings in Prince William Sound after the TV <i>Exxon Valdez</i> oil spill. <u>January 15:</u> DELAYED BECAUSE CONTRACT NOT PREPARED UNTIL DECEMBER -Submit for publication: Length-mass relationships in sea otters in Prince William Sound after the TV <i>Exxon Valdez</i> oil spill. <u>March 15:</u> -Submit survival and reproduction of female sea otters in Prince William Sound, AK after the TV <i>Exxon Valdez</i> oil spill. <u>May 15:</u> -Submit age-specific reproduction of female sea otters in Prince William Sound, AK.
97225	Port Graham Pink Salmon Subsistence Project	E. Anahonak, Port Graham IRA Council	ADFG	<u>Oct. - Dec.:</u> DONE (1.65 MILLION EGGS TO EYED STAGE; 1.42 MILLION EGGS INCUBATED WITH 86% SURVIVAL RATE) - 1.5 million eggs incubated UNDERWAY (OXYGEN PRODUCTION SYSTEM UPGRADED; WILL INSTALL SALTWATER PUMP IN SPRING) - Maintenance and upgrade at hatchery <u>April - June:</u> -250,000 pink salmon fry from the Port Graham hatchery placed in net pens and reared to an average weight of 8 grams. -2 million fry will be reared to an average weight of one gram. <u>July - Sept:</u> -Monitor pink salmon escapement into Port Graham. -Capture hatchery broodstock. -Egg take.

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<u>Proj. No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agency</u> Y	<u>Project Tasks to be Completed this Quarter</u>
97230	Valdez Duck Flats Restoration Project	J. Winchester/PWS Economic Development Council	ADNR	<u>Oct - Dec:</u> UNDERWAY - Prepare contract between ADNR and PWSEDC. <u>Jan - April:</u> - Acquire and review relevant environmental data. - Meet with Committee to assess community needs. - Develop alternatives for assessing Duck Flat. - Hold preliminary meeting with regulatory agencies to identify concerns. - Develop a conceptual plan that evaluates alternatives. - Identify a recommended plan and present to Valdez City council and community. - Refine alternatives as necessary and complete final draft of conceptual plan.
97231	Marbled Murrelet Productivity Relative to Forage Fish Availability and Environmental Parameters	K. Kuletz/FWS	DOI	<u>Oct - Dec:</u> UNDERWAY - Prepare data from 1994 and 1995 surveys and GIS coverages. THREE DONE, 2 OTHERS UNDERWAY - Rewrite and submit manuscripts submitted to journals. DONE - Present paper at International Symposium on Forage Fish. <u>Jan - March:</u> <u>April - June:</u> - Conduct baseline surveys at study sites. <u>July - Sept:</u> - Enter data, prepare for late-summer surveys, APEX work. - Juvenile surveys. - Analysis of field data.

Exxon Valdez Oil Spill Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj. No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agenc.</u> Y ADFG	<u>Project Tasks to be Completed this Quarter</u>
97244	Community-Based Harbor Seal Management and Biological Sampling	M. Reidel/Alaska Native Harbor Seal Commission	Y ADFG	<u>Oct - Dec:</u> DONE -Update contracts with the Alaska Native Harbor Seal commission and the University of Alaska. DONE -Hire technicians. DONE -Hold regional training session for biological sampling in Kodiak. DONE -Train new community technician in Valdez. DONE -Begin biological sample collection. <u>Jan - March:</u> -Produce and distribute first proceedings report. -Two-day Workshop (Alaska Native Harbor Seal Commission): Demonstrate Traditional Knowledge Database. <u>April - June:</u> -Finalize harvest location site data base maps. <u>July - Sept:</u> -Evaluate second year of program.

Exxon Valdez Oil Spill Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj.No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agency</u>	<u>Project Tasks to be Completed this Quarter</u>
97247	Kametolook River Coho Salmon Subsistence Project	J. McCullough & L. Scarborough/ADFG	ADFG	<u>Monthly:</u> -Record temperatures. -Photograph area. <u>Oct - Dec:</u> DONE - Habitat survey DONE - Trap juvenile cohos DONE - Collect adult coho for tissue samples DONE - Talk with highschool students; involve them in field efforts <u>Jan - March:</u> -Meet with village council to discuss the project. -Revise Fish Transport Permit to allow for release of fry into the landlocked lakes or adjacent rivers. -Review meeting in Anchorage with assessment team to evaluate project. -Write EA. <u>April - June:</u> -Release fry from aquarium into landlocked lakes. -Release fry from stream side incubation box into stocking site. -Install large capacity incubation boxes. -Sample river and lake habitats for salmon and trout abundance, age and growth. <u>July - Sept:</u> -Perryville assistants work in Kodiak for two weeks with Pillar Creek Hatchery.
97250	Project Management	All Trustee Council Agencies	ALL	ONGOING
97251-CLO	Akalura Lake Sockeye Salmon Restoration	C. Swanton/ADFG	ADFG	<u>Oct- Dec:</u> UNDERWAY: Plan for FY 97 field studies. <u>April - June:</u> -Monitor sockeye smolt outmigration. <u>July - Sept:</u> -Monitor adult sockeye salmon escapement.

Exxon Valdez Oil Spill Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj.No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agenc Y</u>	<u>Project Tasks to be Completed this Quarter</u>
97255-CLO	Kenai River Sockeye Salmon Restoration	L. Seeb, J. Seeb, K. Tarbox/ADFG	ADFG	<u>Oct - Dec:</u> DONE -Complete laboratory analyses of allozyme and DNA samples from 1996. <u>Jan - March:</u> -Statistical analyses of mixtures. -Refinement of technique. -Archiving of tissues and data. <u>April 15:</u> -Draft final report for FY96.
97256B	Sockeye Salmon Stocking at Solf Lake	D. Gillikin/USFS	USFS	<u>Oct - Dec:</u> UNDERWAY -Determine appropriate brood stock and potential stocking levels. UNDERWAY -Coordinate with PWSAC and the PWSRPT for production planning. DONE -Complete laboratory analysis of water chemistry and plankton data. <u>Jan - March:</u> UNDERWAY -Prepare for field season. DONE -Complete necessary NEPA. <u>April - June:</u> -Install irrigation-type control structure at fishway outlet. -Survey old fishway stream channel and new dam site at other outlet. -Obtain eggs for hatchery incubation.
97258A-CLO	Sockeye Salmon Overescapement Project	D. Schmidt/ADFG	ADFG	<u>February 1:</u> -Submit peer manuscript. <u>April 15:</u> -Complete draft final report for Kodiak Island. <u>July 15:</u> -Complete draft final report Kenai Peninsula.

Exxon Valdez Oil Spill Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj.No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agency</u>	<u>Project Tasks to be Completed this Quarter</u>
97259-CLO	Restoration of Coghill Lake Sockeye Salmon	G. Kyle/ADFG	ADFG	<u>Oct - Jan:</u> UNDERWAY -Process and analyze limnological (water and zooplankton) and smolt samples. <u>April 15:</u> -Complete and submit final report.
97263	Assessment, Protection and Enhancement of Salmon Streams on Port Graham Corporation Lands	W. Meganack, Jr./Port Graham Corporation	ADFG	PROJECT DELAYED UNTIL CONTRACT NEGOTIATIONS, CURRENTLY UNDERWAY BETWEEN ADF&G, PORT GRAHAM CORPORATION, AND KENAI E.D.D., ARE COMPLETE. <u>Oct - Dec:</u> -Assemble information, maps and photo data. -Coordinate project with ADF&G. -Coordinate with fisheries scientist. <u>Jan - March:</u> -Develop final survey plan. -Hire personnel. -Develop maps, photos and data. -Consult with users. <u>April - June:</u> -Train field crews. <u>July - Sept:</u> -Conduct habitat surveys in Port Graham, Rocky and Windy Bay.

Exxon Valdez Oil Spill Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj. No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agency</u>	<u>Project Tasks to be Completed this Quarter</u>
97272-CLO	Chenega Chinook Release Program	J. Milton/Prince William Sound Aquaculture Corporation	ADFG	<u>Oct - March:</u> UNDERWAY - Smolt rearing (brood year 95). UNDERWAY - Incubate eggs. <u>April - June:</u> - Outmigration of brood year 96 fry. - Install netpen at Crab Bay. - Feed and imprint smolts. - Dismantle and remove netpen. <u>July - Sept:</u> - Take chinook eggs for incubation. - Final reporting.
97286	Elders/Youth Conference on Subsistence and the Oil Spill	B. Henrichs/Native Village of Eyak	DOI	NO STATUS REPORT RECEIVED.... <u>Oct - Dec:</u> - Develop PL-638 cooperative agreement. <u>Jan - Sept:</u> - Conference planning.
97290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance	B. Nelson/NOAA	NOAA	<u>Ongoing:</u> - Store samples. - Analyze data.

Exxon Valdez Oil Spill Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj. No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agency</u>	<u>Project Tasks to be Completed this Quarter</u>
97300	Synthesis of the Scientific Findings from the Exxon Valdez Oil Spill Restoration Program	R. Spies/Applied Marine Sciences	Y ADNR	<u>Oct - Dec:</u> DONE - Provide moderate-length synthesis outlines to the Executive Director. DONE -Outlines distributed to Principal Investigators. UNDERWAY -Written accounts due from Principal Investigators. <u>Jan - March:</u> -Scientific editing complete on content of written accounts; distribute to Principal Investigators. -Modeling workshop to be held in Anchorage. -Principal Investigators to provide any further comments on edited contributions. -Outline of modeling effort for FY98 provided to Executive Director.
97302	Prince William Sound Cutthroat Trout, Dolly Varden Char Inventory	K. Hodges/USFS	USFS	<u>Oct - Dec:</u> DONE -Contact ADF&G, Native groups, anglers for information on cutthroat trout and Dolly Varden char locations. DONE -Use aerial photographs, maps, channel-type information to predict which streams may have documented populations. <u>Jan - March:</u> DONE -Arrange logistics, hire crews. <u>April - June:</u> -Begin surveys. <u>July - Sept:</u> -Complete surveys. -Compile results and write report.

Exxon Valdez Oil Spill Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj.No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agency</u>	<u>Project Tasks to be Completed this Quarter</u>
97304	Kodiak Island Borough Master Waste Management Plan	J. Selby/Kodiak Island Borough	ADEC	<u>Oct - Dec:</u> UNDERWAY -Establish Waste Management Committee DONE -Write RFP. UNDERWAY; ANTICIPATE FEBRUARY -Award contract. <u>Jan - March:</u> -First Committee meeting. <u>July - Sept:</u> -Identify and prioritize the major sources of marine pollution and solid waste. -Establish a public participation program. -Develop waste management recycling and disposal alternatives.
97306	Ecology and Demographics of Pacific Sand Lance in Lower Cook Inlet	J. Piatt/DOI-NBS	DOI	<u>Oct - March:</u> UNDERWAY -Consolidate all information collected in 1995 and 1996 into electronic format. UNDERWAY -Establish areas where information on sandlance distribution and abundance is weak.
97320	Sound Ecosystem Assessment (SEA)	T. Cooney, et al.	ADFG	<u>Oct - Dec:</u> OCEAN STATE, NPZ, AND NEKTON MODELS ALL UPDATED WITH FY 96 DATA-Continue ongoing modeling and data analysis. HERRING FIELD WORK INITIATED FOR OVERWINTERING OBSERVATION-Continue herring program field work. INITIAL PLANS MADE FOR HERRING AND OCEANOGRAPHIC CRUISES IN THE SPRING -Refine remaining FY97 field plans. <u>March - Sept:</u> -Continue salmon and oceanographic field work. -Continue ongoing modeling and data analysis.
97424	Restoration Reserve	All Trustee Council Agencies	ALL	ONGOING

Exxon Valdez Oil S Project Status Summary
1997 Work Plan
Quarter Ending December 31, 1996

<u>Proj No.</u>	<u>Project Title</u>	<u>Proposer</u>	<u>Lead Agenc y</u>	<u>Project Tasks to be Completed this Quarter</u>
97427	Harlequin Duck Recovery Monitoring	D. Rosenberg/ADFG	ADFG	<u>Oct - Dec:</u> UNDERWAY - Data entry and analysis. UNDERWAY - TEK investigation <u>Jan - March:</u> - Arrange for permits. - Plan logistics for winter surveys. - Contract for fuel transport. Conduct winter surveys in PWS. <u>April - June:</u> - Hire technicians. - Arrange field logistics for field camps. - Prepare field equipment. - Begin spring surveys. <u>July - Sept:</u> - End fall surveys.

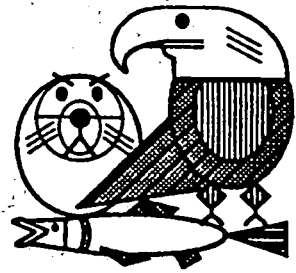
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Exxon Valdez Oil Spill Trustee Council

Restoration Office

645 "G" Street, Anchorage, AK 99501

Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

TO: Trustee Council

THROUGH: Molly McCammon
Executive Director

FROM: Traci Cramer
Administrative Officer

RECEIVED
FEB 10 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD
DATE: January 21, 1997

RE: Financial Report as of December 31, 1996

Attached is the Statement of Revenue, Disbursements and Fees, and accompanying notes for the *Exxon Valdez* Joint Trust Fund for the period ending December 31, 1996.

The following is a summary of the information incorporated in the notes and contained on the statement.

Liquidity Account Balance	\$71,903,107	
Less: Current Year Commitments (Note 5)	\$18,799,292	
Plus: Adjustments (Note 6)	<u>\$316,797</u>	
Uncommitted Fund Balance		\$53,420,612
Plus: Future Exxon Payments (Note 1)	\$350,000,000	
Less: Remaining Reimbursements (Note 3)	20,000,000	
Less: Remaining Commitments (Note 7)	<u>\$48,805,734</u>	
Total Estimated Funds Available		\$334,614,878
Restoration Reserve		\$35,996,170

If you have any questions regarding the information provided please give me a call at 586-7238.

attachments

cc: Agency Liaisons
Bob Baldauf

Trustee Agencies

State of Alaska: Departments of Fish & Game, Law, and Environmental Conservation

United States: National Oceanic & Atmospheric Administration, Departments of Agriculture and Interior

NOTES TO THE STATEMENT OF REVENUE, DISBURSEMENTS AND FEES
FOR THE EXXON VALDEZ JOINT TRUST FUND
As of December 31, 1996

1. Contributions - Pursuant to the agreement Exxon is to pay a total of \$900,000,000.

Received to Date	\$550,000,000
Future Payments	\$350,000,000

2. Interest Income - In accordance with the MOA, the funds are deposited in the United States District Court, Court Registry Investment System (CRIS). All deposits with CRIS are maintained in United States government treasury securities with maturities of 100 days or less. Total earned since the last report is \$305,455.
3. Reimbursement of Past Costs - Under the terms of the agreement, the United States and the State are reimbursed for expenses associated with the spill. The remaining reimbursements represents that amount due the State of Alaska.
4. Fees - CRIS charges a fee of 10% for cash management services. Total paid since the last report is \$30,545.
5. Current Year Commitments - Includes \$1,570,600 for the Chenega-Area Shoreline Residual Oiling Project, \$193,692 for the 1997 Deferred Work Plan Projects, \$531,000 for KEN 1015, \$128,000 for KAP 98, \$52,000 for KAP 101, \$68,000 for KAP 131, \$256,000 for KAP 132 and the following land payments.

<u>Seller</u>	<u>Amount</u>	<u>Due</u>
Akhiok-Kaguyak	\$7,500,000	September 1997
Koniag, Incorporated	\$4,500,000	September 1997
Shuyak	\$4,000,000	October 1997

6. Adjustments - Under terms of the Agreement, both interest earned on previous disbursements and prior years unobligated funding or lapse are deducted from future court requests. Unreported interest and lapse is summarized below.

	Interest	Lapse
United States	\$0	\$0
State of Alaska	\$316,797	\$0

7. Remaining Commitments - Includes the following land payments.

<u>Seller</u>	<u>Amount</u>	<u>Due</u>
Shuyak	\$16,000,000	October 1998 through 2001
Shuyak	\$11,805,734	October 2002
Koniag, Incorporated	\$4,500,000	September 1998
Koniag, Incorporated	\$16,500,000	September 2002

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Trustee Agencies

State of Alaska: Departments of Fish & Game, Law, and Environmental Conservation
United States: National Oceanic & Atmospheric Administration, Departments of Agriculture and Interior

STATEMENT OF REVENUE, DISBURSEMENT, AND FEES
EXXON VALDEZ OIL SPILL JOINT TRUST FUND
As of December 31, 1996

	1994	1995	1996	To Date 1997	Cumulative Total
REVENUE:					
Contributions: (Note 1)					
Contributions from Exxon Corporation	70,000,000	70,000,000	70,000,000	0	550,000,000
Less: Credit to Exxon Corporation for clean-up costs incurred					(39,913,688)
Total Contributions	70,000,000	70,000,000	70,000,000	0	510,086,312
Interest Income: (Note 2)					
Exxon Corporation escrow account					831,233
Joint Trust Fund Account	3,736,000	5,706,666	3,963,073	900,994	16,280,733
Total Interest	3,736,000	5,706,666	3,963,073	900,994	17,111,966
Total Revenue	73,736,000	75,706,666	73,963,073	900,994	527,198,278
DISBURSEMENTS:					
Reimbursement of Past Costs: (Note 3)					
State of Alaska	25,000,000		3,291,446		86,559,288
United States	6,271,600	2,697,000	0		69,812,045
Total Reimbursements	31,271,600	2,697,000	3,291,446	0	156,371,333
Disbursements from Liquidity Account:					
State of Alaska	44,546,266	41,969,669	43,340,950	3,075,625	158,020,823
United States	6,008,387	48,019,928	31,047,824	2,790,000	103,292,520
Transfer to the Restoration Reserve			35,996,231		35,996,231
Total Disbursements	50,554,653	89,989,597	110,385,005	5,865,625	297,309,574
FEES:					
U.S. Court Fees (Note 4)	364,000	586,857	396,307	90,099	1,614,264
Total Disbursements and Fees	82,190,253	93,273,454	114,072,758	5,955,724	455,295,170
Increase (decrease) in Liquidity Account	(8,454,253)	(17,566,788)	(40,109,685)	(5,054,731)	71,903,107
Liquidity Account Balance, beginning balance	143,088,564	134,634,311	117,067,523	76,957,838	
Liquidity Account Balance, end of period	134,634,311	117,067,523	76,957,838	71,903,107	
Current Year Commitments: (Note 5)					(18,799,292)
Adjustments: (Note 6)					316,797
Uncommitted Liquidity Account Balance					53,420,612
Remaining Reimbursements (Note 3)					(20,000,000)
Remaining Commitments: (Note 7)					(48,805,734)
Total Estimated Funds Available					334,614,878
Restoration Reserve					35,996,170

Schedule for Development of FY 98 Work Plan

*** INDICATES TENTATIVE DATE**

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Feb. 14, Friday	Invitation mailed out	EXXON VALDEZ OIL SPILL
Feb. 17, Monday	Presidents Day	TRUSTEE COUNCIL
Feb. 19, Wed.		ADMINISTRATIVE RECORD
Feb. 20-21, Th./Fri.		SEA herring review
		APEX review
* March 4-5, Tues./Wed.	PAG meeting: Day 1 orientation, Day 2 regular agenda	
March 31, Monday	Seward's Day (state holiday)	
April 15, Tuesday	DFDs due; annual/final reports due	
April 21-May 13	Scientific review by Chief Scientist and core peer reviewers	
May 16, Friday	Staff meet with Executive Director to develop draft recommendation	
May 19, Monday	Distribute draft recommendation to RWF	
May 21, Wednes.	RWF meeting: Finalize draft recommendation	
May 26, Monday	Memorial Day	
* May 28, Wednes.	PAG meeting: Advise on draft recommendation	
* June 4, Wednes.	Draft FY 98 Work Plan to printer	
* June 9, Monday	Draft FY 98 Work Plan mailed out	
July 4, Friday	Fourth of July	
* July 15, Tuesday evening	Public meeting on Draft Work Plan (teleconference from Anchorage); close of public comment period	
* July 16, Wednes.	PAG meeting: Advise on final recommendation	
* July 17, Thursday	RWF meeting: Finalize recommendation	
* Week of August 4	Trustee Council meet to approve FY 98 Work Plan	
* September	PAG field trip: Kodiak	

Exxon Valdez Oil Spill Trustee Council

645 G Street, Suite 401, Anchorage, AK 99501-3451 907/278-8012 fax: 907/276-7178



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FEB 10 1997

MEMORANDUM

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

To: Gina Belt, Maria Lisowski, Barry Roth, and Alex Swiderski
From: Molly McCammon, Executive Director
Date: February 6, 1997
Subject: Data Ownership Policy

Please find enclosed a revised version of the proposed data ownership policy for the Trustee Council. This reflects the discussion at the December 6, 1996 Trustee Council meeting as well as more recent discussions among Barry Roth, Alex Swiderski, Eric Myers, and Stan Senner. I intend to bring this up for action at the Trustee Council meeting on February 14, the packets for which will be distributed tomorrow, February 7. If there are any additional concerns that need immediate attention, please let Eric or Stan know today.

encl: (1)

**For Consideration at the
Trustee Council Meeting
February 14, 1997**

EXISTING POLICY

According to policy number 20 in the Exxon Valdez *Oil Spill Restoration Plan* (November 1994):

Restoration must reflect public ownership of the process by timely release and reasonable access to information and data.

Information from restoration projects must be available to other scientists and to the general public in a form that can be easily used and understood. An effective restoration program requires the timely release of such information. This policy underscores the fact that since the restoration program is funded by public money, the public owns the results.

In addition, item number 5 under Professional Services Contracts in the Trustee Council *Procedures* adopted August 29, 1996 states:

Special Considerations. All notes and other data developed by the contractor shall remain the sole property of the contracting agency.

PROPOSED CLARIFICATION

We now propose to clarify this statement of Trustee Council policy by adoption of the following:

Therefore, consistent with state and federal laws, any data or other products resulting from any project to which the Trustee Council has contributed financially are in the public domain and as such must be available to the public. Fees will only be charged for copies of data in accordance with the Federal Freedom of Information Act, the State Public Records Act, or other applicable law. Data means recorded information, regardless of form or the media on which it is recorded, including computer programs, data bases, and software. Each final report on a restoration project shall include a brief description of data gathered in the project, including definition of the types of data gathered, the form or forms in which the data are recorded, the location of the data, and a permanent contact at a public institution the appropriate federal or state agency such that the data are accessible to the public, including scientific users, after completion of the project.

Proj. No.	Project Title	Proposer	Lead Agency	New or Cont'd	FY97 Rec.	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	Total FY97-02 Rec.
97162 (supp)	Supplement: Investigations of Disease Factors Affecting Declines of Pacific Herring Populations in PWS	G. Marty/UC Davis R. Kocan/Univ. Washington	ADFG	Cont'd	\$34.3	\$0.0	\$0.0	\$0.0	\$34.3

Project Abstract

When the Pacific herring population in Prince William Sound crashed in 1993, commercial fisheries were closed. Viral hemorrhagic septicemia virus was a major cause of population decline. In 1994, the virus was isolated from 5% of fish in Prince William Sound, but in 1996 the virus was not isolated from any fish sampled from Prince William Sound or Sitka Sound. By comparison, the virus was isolated from 21% of fish sampled from the 1996 spawn-on-kelp pound fishery in Craig, Alaska. Because the pound fishery will be reopened in Prince William Sound in 1997, this project will study the prevalence of virus in fish and water associated with the pounds. Results will be compared with approved field and laboratory studies to determine if virus in pound fisheries threatens population recovery.

Chief Scientist's Recommendation

The investigators are highly qualified, and their work to date has been excellent. Disease was implicated in the herring population crash in 1993, and the reopening of the pound fishery in Spring 1997 provides an excellent opportunity to investigate the possible association between this disease and the Prince William Sound pound fishery. The proposed supplement to project 97162 has direct bearing on future management and recovery of this ecologically and commercially important species. I recommend that the supplement be funded in FY 97.

Executive Director's Recommendation

Fund. This supplement to the ongoing Pacific herring disease project will enable researchers to monitor disease levels associated with the pound fishery in Prince William Sound. This fishery is opening in 1997 for the first time since 1993. The project is supported by the affected fishing interests, and the results are very important to the management and conservation of a key injured species. Any follow-up to this supplementary work, however, should be considered as part of the ongoing Project 162 in the context of the FY 98 work plan.

EXECUTIVE DIRECTOR'S RECOMMENDATION: OUTLINE OF FY 97 WORK PLAN

Proj.No.	ProjectTitle	Proposer	Lead Agency	New or Cont'd	FY97 Rec.	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	Total FY97-02 Rec.
97100 (supp)	Supplement: Administration, Science Management, and Public Information (Video Production)	All Trustee Council Agencies	ALL	Cont'd 1st yr. 1 yr. project	\$71.4	\$29.3	\$0.0	\$0.0	\$100.7

Project Abstract

These additional funds will supplement the public outreach portion of the admin./public information budget. The funds will be used to contract, through competitive bid, with an independent film crew and a still photographer to produce a 10-minute video (for use at public meetings and press briefings), a 30-minute documentary (to be aired on public and private stations), and photographs (for use in newspapers, magazines, and other publications) covering Trustee Council restoration projects and accomplishments. Additional raw footage will be produced for video press releases and release to independent documentary filmmakers.

Chief Scientist's Recommendation

Proposal not reviewed.

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EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Executive Director's Recommendation

Fund. This proposal stems from Trustee Council consideration of a proposal (97301) to produce a TV pilot. The Council's action on Project 97301 was to "consider further the possibility of funding some elements of this proposal together with media footage to be used for various educational/outreach efforts." Currently, the Council is unable to respond to requests for such footage, significantly limiting our ability to inform the public of the progress of restoration. Members of the Public Advisory Group have expressed a strong interest in this project as an important step in getting restoration information to the public on a broader scale. Filming is scheduled for Summer 1997 and production is scheduled for Winter 1997-98 so that the products will be available in advance of the 10th anniversary of the spill.

Public Info/Sci Mgt/Admin/ - Approved to Date:	\$2,869.2
Executive Director's Additional Recommendation:	\$71.4
New FY 97 Total:	\$2,940.6

EXECUTIVE DIRECTOR'S RECOMMENDATION: ADDITIONAL PROJECTS -- FY 97 WORK PLAN

Proj. No.	Project Title	Proposer	Lead Agency	New or Cont'd	FY97 Rec.	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	Total FY97-02 Rec.
97248	Documentation of Herring and Other Forage Fish Natural History through Local and Traditional Ecological Knowledge	J. Seitz and E. Brown/UAF	ADFG	New 1st yr. 2 yr. project	\$46.9		\$0.0	\$0.0	\$46.9

Project Abstract

This project will collect historical and contemporary knowledge about the ecology of herring and other forage fish. A comprehensive literature review and primary archival records search will complement in-person interviews of individuals and groups regarding the distribution of herring and other forage fish. The project will reconstruct a historical overview of the natural history of herring in Prince William Sound, lower Cook Inlet, and Kodiak. Researchers will map information on their distribution, create an ASCII file of mapped data, and create a subject index of textual information on the ecology and life cycle of the fish by species. Data and reports will be provided to affiliated research projects, particularly the SEA-Herring project (V320T) and APEX (V163).

Chief Scientist's Recommendation

This project could contribute to the redevelopment of confidence in fish resources by subsistence users, and provide useful information to supplement and complement information being developed through the SEA (V320) and APEX (V163) projects in regard to the distribution and life history of herring and other forage fish. I believe strongly, however, that the goal should be to integrate knowledge from traditional and local sources and from scientific research for the benefit of these fisheries resources. I have questions about the cost of the project, which seems high, but believe that it should be funded in FY 97.

Executive Director's Recommendation

Fund contingent on final approval of the Detailed Project Description and budget. This project was deferred in August and again in December pending hiring of a TEK Specialist under Project 97052B. The revised proposal was developed with the assistance of Henry Huntington, TEK Specialist, and supplements and complements the effort currently underway in Project 97320T/SEA-Herring to review archival data on the historical distribution and population size of herring. This project will represent the Trustee Council's first effort to actively integrate local/traditional knowledge with an ongoing research project, using the TEK Protocols adopted by the Council in December 1996 and the expertise of our TEK Specialists (V052B) and network of community facilitators (V052A). This project will address restoration objectives for herring by contributing traditional and local knowledge on herring distribution and population size. Information on other forage fish will be documented as the opportunity arises. The PIs will work with residents of four spill-area communities in FY 97. Depending on the outcome of the FY 97 effort, funds may be provided in FY 98 to work with additional communities.

EXECL /E DIRECTOR'S RECOMMENDATION: ADDITIONAL PROJECTS -- FY 97 WORK PLAN

Proj.No.	ProjectTitle	Proposer	Lead Agency	New or Cont'd	FY97 Rec.	FY98 Estimate	FY99 Estimate	FY00-02 Estimate	Total FY97-02 Rec.
97254	Delight and Desire Lakes Restoration	N. Dudiak/ADFG	ADFG	New 1st yr. 2 yr. project	\$123.1		\$0.0	\$0.0	\$123.1

Project Abstract

The project is intended to accelerate the recovery of the currently depressed wildstock sockeye salmon of Delight and Desire lakes through lake fertilization. Application of liquid fertilizer would increase the forage base for rearing sockeye salmon fry through nutrient enrichment. The expected result would be larger, more numerous sockeye smolt with a corresponding increase in marine survival rates.

Chief Scientist's Recommendation

I have several concerns about the ultimate cost and underlying rationale and need for a Delight and Desire lakes fertilization project, if it were to be undertaken. However, the initial limnological work, which is proposed in FY 97, appears reasonable and will be of value, in itself, in terms of better understanding the ecology, carrying capacity, and management of these recently glaciated lake systems. On this basis, I recommended funding only the FY 97 limnological work.

Executive Director's Recommendation

Fund. The purpose of this project is to conduct one, possibly two years of limnological work at Delight and Desire lakes on the outer Kenai coast to determine whether application of liquid fertilizers would increase the forage base for rearing sockeye, leading to increased returns for commercial and subsistence users. Although the Chief Scientist has raised questions about the cost and need for a fertilization project (if recommended for implementation), the initial limnological work will improve understanding and management of these sockeye rearing lakes, regardless of whether the fertilization is ever conducted. Prospects for Trustee Council support of a subsequent lake fertilization process, if appropriate, will be strongest if there is significant cost sharing by private interests.

FY 97 Work Plan - Approved to Date:	\$15,999.5
Executive Director's Additional Recommendation:	\$204.3
New FY 97 Total:	\$16,203.8

11.8.2 F

Exxon Valdez Oil Spill Trustee Council

645 G Street, Suite 401, Anchorage, AK 99501-3451 907/278-8012 fax: 907/276-7178



TO: Trustee Council Members

FROM: Molly McGammon
Executive Director

DATE: February 7, 1997

SUBJECT: Public Outreach

RECEIVED

FEB 10 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Motion

Amend the Administration, Public Information and Scientific Management budget (Project 97100/9800) to include \$100,700 to contract with a private film crew to produce documentary-style film, a 10-minute video, a 30-minute documentary and still photographs covering EVOS Trustee Council projects, goals and accomplishments. The funds would be allocated as follows:

97100	\$71,400
98100	\$29,300

If all of the money is not spent in FY97, it is anticipated that the remaining funds will be included in the FY98 budget to finish this project.

Background

Members of the PAG have expressed a strong interest in this project as an important step in getting EVOS restoration information to the public on a nationwide scale. This two-year effort will have multiple uses in helping us prepare for the 10th anniversary and educate the public about the status of recovery. The project is intended to achieve the following objectives:

- A) Provide raw footage of science projects and habitat acquisition parcels for video press releases.
- B) Provide raw footage in bulk to be released to independent documentary filmmakers.

C) Create a 10-minute documentary explaining the EVOS TC process and highlighting accomplishments. This would be used at public meetings and press briefings to provide a quick overview. It could also be used in a "continuous replay" format as part of a larger display.

D) Create a 30-60 minute documentary and market it for airing on public and private stations.

E) Create a library of color slides and black and white photographs for use in newspapers, magazines and other publications.

The plan is to budget approximately \$100,000 over the next two years to contract with an independent filmmaker through a competitive bid to shoot the film and produce documentaries that meet public broadcasting guidelines. A still photographer would also be hired as part of the same package. An RFP would be issued to help select the right contractor.

Most of the filming would take place this summer with production to take place during the winter of '97-'98. This will give us enough time to distribute raw footage and market the documentary for the 10th anniversary.

Estimated Costs

A quality film production generally costs from \$1,200-\$1,700 per minute, plus travel and contract administration. This budget reflects that rule of thumb.

Video Production	40 minutes @ \$1,700/minute	\$ 68,400
Travel		\$ 25,900
Still photographer	11 days @ \$400/day	\$ 4,400
General Administration	2 Percent	<u>\$ 2,000</u>
Total		\$100,700

Proposed Timeline

FY97

Preproduction would include:

- creation of overall concept, outline, scripting as much as possible, logistical planning, research and acquisition of file footage in the public domain.

Filming in the summer of 1997 should cover:

- all large parcels acquired through the habitat protection program
- Kenai River parcels
- major restoration projects in the field
- injured resources and services (purchased as stock footage and taken from public archives)
- Alutiiq Museum, SeaLife Center

FY98

Production in fall of 1997 should include:

- production of 10-minute overview
- creation of video press releases with variety of cuts

Filming in the summer of 1998 should cover:

- selected restoration projects in the field
- opening of Alaska SeaLife Center

Production in summer-fall of 1998 should include:

- packaging video for documentary users
- production of a 30-minute documentary

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Budget Category:	Proposed FFY 1997	Proposed FFY 1997	Total
Personnel	\$44.6	\$21.2	\$65.8
Travel	\$12.4	\$3.0	\$15.4
Contractual	\$12.0	\$3.5	\$15.5
Commodities	\$1.0	\$1.0	\$2.0
Equipment	\$0.0	\$0.0	\$0.0
Contractor Total	\$70.0	\$28.7	\$98.7
General Administration	\$1.4	\$0.6	\$2.0
Project Total	\$71.4	\$29.3	\$100.7
Dollar amounts are shown in thousands of dollars.			

Personnel Costs:	Days Budgeted	Daily Costs	Proposed FFY 1997	Days Budgeted	Daily Costs	Proposed FFY 1998	Total Days	Total Costs
Position Description								
Pre-Production	10.0	0.5	5.0				10.0	5.0
Research/Writing	6.5	0.3	2.0	6.5	0.3	2.0	13.0	4.0
Film Crew	18.0	1.4	25.2	8.0	1.4	11.2	26.0	36.4
Editing	3.0	1.0	3.0	6.0	1.0	6.0	9.0	9.0
Photographer	11.0	0.4	4.4	4.0	0.5	2.0	15.0	6.4
Graphics	10.0	0.5	5.0				10.0	5.0
Subtotal	58.5	4.1		24.5	3.2		83.0	
Personnel Total			\$44.6			\$21.2		65.8

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Travel Costs:	Ticket Price	1997 Trips	1997 Days	Propos'd FFY 1997	1998 Trips	1998 Days	Proposed FFY 1998	Total Trips	Total Days	Total Costs
Description										
Anchorage to PWS * Includes three trips for five days each	0.2	12	60	8.4	3	18	2.4	15	78	10.8
Anchorage to Kodiak * Includes one trip for two days	0.3	8	8	3.2		6	0.6	8	14	3.8
Anchorage to Kenai/Homer * Includes one trip for two days			8	0.8					8	0.8
* The travel assumes that the film crew will consist of four individuals.										
Subtotal		20	76		3	24		23	100	
Travel Total				\$12.4			\$3.0			\$15.4

Contractual Costs:	Props'd FFY 1997	Props'd FFY 1998	Total Costs
Description			
Copying	1.0		1.0
Air Charters: Kodiak - one day total	1.0		1.0
Air Charters: PWS - four days @ \$1.0 a day	2.0	2.0	4.0
Boat Charters: PWS - two trips for four days each @ \$.5 a day and one trip for three days @ \$.5 a day	4.0	1.5	5.5
Purchase of File Footage @\$60 per second	4.0		4.0
Contractual Total	\$12.0	\$3.5	\$15.5
Commodities Costs:	Proposed FFY 1997	Props'd FFY 1998	Total Costs
Description			
Film	1.0	1.0	2.0
Commodities Total	\$1.0	\$1.0	\$2.0

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Budget Category:	Authorized FFY 1996	Proposed FFY 1997							
Personnel		\$44.6							
Travel		\$12.4							
Contractual		\$12.0							
Commodities		\$1.0							
Equipment		\$0.0							
Subtotal	\$0.0	\$70.0	LONG RANGE FUNDING REQUIREMENTS						
Indirect			Estimated FFY 1998	Estimated FFY 1999	Estimated FFY 2000	Estimated FFY 2001	Estimated FFY 2002		
Project Total	\$0.0	\$70.0	\$28.3						
Full-time Equivalents (FTE)									
Other Resources			Dollar amounts are shown in thousands of dollars.						
Comments:									
The total requested for this two year project is \$98.7. It is anticipated that \$70.0 will be expended during FY97 and \$28.7 will be expended during FY98. The funds would be disbursed to the Alaska Department of Fish and Game and would be managed by the Restoration Office under the Administration, Public Information and Scientific Management budget. The purpose of the funding is to contract with a private film crew to produce documentary-style film and still photographs covering EVOS Trustee Council projects. Over the two years of this project, it is anticipated that both a 10-minute video and a 30-minute documentary will be produced. The total approved by the Trustee Council to date for the 97100 budget is \$2,869.2. This includes \$2,857.1 approved in August and \$12.1 approved in December. Of the funding approved in August, \$317.3 is allocated for the Oil Spill Information Center, \$59.6 is allocated for Synthesis and Dissemination, \$400.1 is allocated for the Chief Scientist and Peer Reviewers, \$1,603.2 is allocated for the Restoration Office, \$122.7 is allocated for the Public Advisory Group and \$354.2 is allocated for the Restoration Work Force. The previous amendment approved by the Trustee Council in December represented funding for public outreach associated with archaeological planning. Since this represents an amendment, a rate of 2% will be used to calculate general administration.									

1997

Project Number: 97100
 Project Title: Documentary Filming and Still Photography
 Name: Unknown at this time.

FORM 4A
 Non-Trustee
 SUMMARY

Prepared:

1 of 4

2/7/97

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Personnel Costs:				Days Budgeted	Daily Costs	Overtime	Proposed FFY 1997
Name	Position Description						
Unknown	Pre-Production			10.0	0.5		5.0
Unknown	Research/Writing			6.5	0.3		2.0
Unknown	Film Crew			18.0	1.4		25.2
Unknown	Editing			3.0	1.0		3.0
Unknown	Photographer			11.0	0.4		4.4
Unknown	Graphics			10.0	0.5		5.0
Subtotal				58.5	4.1	0.0	
Personnel Total							\$44.6
Travel Costs:			Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FFY 1997
Description							
Anchorage to PWS * Includes three trips for five days each			0.2	12	60	0.1	8.4
Anchorage to Kodiak * Includes one trip for two days			0.3	8	8	0.1	3.2
Anchorage to Kenai/Homer * Includes one trip for two days					8	0.1	0.8
* The travel assumes that the film crew will consist of four individuals.							
Travel Total							\$12.4

1997

Prepared:

2 of 4

Project Number: 97100

Project Title: Documentary Filming and Still Photography

Name: Unknown at this time.

FORM 4B
Personnel
& Travel
DETAIL

2/7/97

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:		Proposed
Description		FFY 1997
Copying		1.0
Air Charters: Kodiak - one day total		1.0
Air Charters: PWS - two days @ \$1.0 a day		2.0
Boat Charters: PWS - two trips for four days each @ \$.5 a day		4.0
Purchase of File Footage @\$60 per second		4.0
Contractual Total		\$12.0
Commodities Costs:		Proposed
Description		FFY 1997
Film		1.0
Commodities Total		\$1.0

1997

Project Number: 97100
 Project Title: Documentary Filming and Still Photography
 Name: Unknown at this time.

**FORM 4B
 Contractual &
 Commodities
 DETAIL**

Prepared:

October 1, 1996 - September 30, 1997

1997

Project Number: 97100
Project Title: Documentary Filming and Still Photography
Name: Unknown at this time.

FORM 4B
Equipment
DETAIL

4 of 4

2/7/97

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Budget Category:	Authorized FFY 1997	Proposed FFY 1998						
Personnel	\$44.6	\$21.2						
Travel	\$12.4	\$3.0						
Contractual	\$12.0	\$3.5						
Commodities	\$1.0	\$1.0						
Equipment	\$0.0	\$0.0						
Subtotal	\$70.0	\$28.7	LONG RANGE FUNDING REQUIREMENTS					
Indirect				Estimated FFY 1999	Estimated FFY 2000	Estimated FFY 2001	Estimated FFY 2002	
Project Total	\$70.0	\$28.7						
Full-time Equivalents (FTE)								
Dollar amounts are shown in thousands of dollars.								
Other Resources								
Comments: The total requested for this two year project is \$98.7. It is anticipated that \$70.0 will be expended during FY97 and \$28.7 will be expended during FY98. The funds would be disbursed to the Alaska Department of Fish and Game and would be managed by the Restoration Office under the Administration, Public Information and Scientific Management budget. The purpose of the funding is to contract with a private film crew to produce documentary-style film and still photographs covering EVOS Trustee Council projects. Over the two years of this project, it is anticipated that both a 10-minute video and a 30-minute documentary will be produced. A general administration rate of 2% will be used.								

1998

Project Number: 97100
 Project Title: Documentary Filming and Still Photography
 Name: Unknown at this time.

**FORM 4A
 Non-Trustee
 SUMMARY**

Prepared:

1 of 4

2/7/97

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Personnel Costs:				Days Budgeted	Daily Costs	Overtime	Proposed FFY 1998
Name	Position Description						
Unknown	Research/Writing			6.5	0.3		2.0
Unknown	Film Crew			8.0	1.4		11.2
Unknown	Editing			6.0	1.0		6.0
Unknown	Graphics			4.0	0.5		2.0
Subtotal				24.5	3.2	0.0	
Personnel Total							\$21.2

Travel Costs:			Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FFY 1998
Description							
Anchorage to PWS • Includes one trip for six days			0.2	3	18	0.1	2.4
Anchorage to Kenai/Homer • Includes one trip for two days					6	0.1	0.6
* The travel assumes that the film crew will consist of three individuals.							
Travel Total							\$3.0

1998

Project Number: 97100
 Project Title: Documentary Filming and Still Photography
 Name: Unknown at this time.

**FORM 4B
 Personnel
 & Travel
 DETAIL**

Prepared:

2 of 4

2/7/97

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:		Proposed
Description		FFY 1998
Air Charters: PWS - two days @ \$1.0 a day		2.0
Boat Charters: PWS - three days each @ \$.5 a day		1.5
Contractual Total		\$3.5
Commodities Costs:		Proposed
Description		FFY 1998
Film		1.0
Commodities Total		\$1.0

1998

Project Number: 97100
 Project Title: Documentary Filming and Still Photography
 Name: Unknown at this time.

FORM 4B
Contractual &
Commodities
DETAIL

Prepared:

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

New Equipment Purchases:		Number of Units	Unit Price	Proposed FFY 1998
Description				
Those purchases associated with replacement equipment should be indicated by placement of an R.		New Equipment Total		\$0.0
Existing Equipment Usage:		Number of Units		
Description				

1998

Project Number: 97100
Project Title: Documentary Filming and Still Photography
Name: Unknown at this time.

FORM 4B
Equipment
DETAIL

Prepared:

4 of 4

2/7/97

11.8.2 F
Received 1/31/97

Role of Pacific Herring Pound Fisheries on Expression of Viral Hemorrhagic Septicemia Virus in Prince William Sound

Project Number: 97162-supplement
Restoration Category: Research
Proposer: University of California, Davis
Lead Trustee Agency: ADFG
Cooperating Agencies: University of Washington
Alaska Sealife Center:
Duration: 4th year, 5-year project
Additional Cost FY97: \$34,300
Cost FY98: not estimated
Cost FY99: none
Cost FY00: none
Cost FY01: none
Cost FY02: none
Geographic Area: Prince William Sound,
Injured Resource/Service: Pacific herring, commercial fishing, subsistence

RECEIVED
FEB 10 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

ABSTRACT

When the Pacific herring population in Prince William Sound (PWS) crashed in 1993, commercial fisheries were closed. Viral hemorrhagic septicemia virus was a major cause of population decline. In 1994, the virus was isolated from 5% of fish in PWS, but in 1996 the virus was not isolated from any fish sampled from PWS or Sitka Sound. By comparison, virus was isolated from 21% of fish sampled from the 1996 spawn-on-kelp pound fishery in Craig, Alaska. Because the pound fishery will be reopened in PWS in 1997, we propose study to determine the prevalence of virus in fish and water associated with the pounds. Results will be compared with approved field and laboratory studies to determine if virus in pound fisheries threatens population recovery.

INTRODUCTION

Pacific herring (*Clupea pallasii*) normally spawn in April in Prince William Sound (PWS). Although near-record spawning biomass was predicted for 1993, the population crashed. Many fish behaved abnormally and had external hemorrhages; therefore, the prespawning commercial fishery was severely curtailed in 1993. In limited study conducted by ADFG, viral hemorrhagic septicemia virus (VHSV) was the only major pathogen isolated, but its role in population decline was not determined (Meyers et al. 1994). When herring populations continued to decline in 1994, project 94320-S was initiated under emergency conditions to determine causes of herring morbidity (sickness), with particular emphasis on the role of VHSV. The virus was isolated from 11 of 233 herring (4.7%) in 1994 and infection was associated with lesions.

In 1995 and 1996 we repeated and expanded the 1994 study by sampling prespawning, spawning, and immediate postspawning herring in both PWS and a reference site, Sitka Sound (SS). Viral hemorrhagic septicemia virus was isolated from 6.2% of prespawning fish from PWS in 1995, but VHSV was not isolated from any spawning fish in PWS or SS in 1995, or from any fish in 1996. Since 1995, laboratory study under the direction of Dr. Richard Kocan at the University of Washington (95162 - 97162) has revealed that handling and crowding stress resulted in expression of latent VHSV when Pacific herring sampled from Puget Sound were held for as little as two days. Also, VHSV was readily passed through the water to known virus-free fish, and the resultant disease is lethal.

Based on these findings and recommendations from peer reviewers (November 1995 review of Pacific herring projects funded by the Trustee Council), a pilot study was conducted on the 1996 spawn-on-kelp fishery in Craig, Alaska (SE Alaska). In this fishery, reproductively mature adults are caught via purse seine and transported to floating net pens where they are held (closed pounding) up to six days while they spawn on vertically suspended kelp blades. After spawning, fish are released from the pens to rejoin the wild stocks. Of 38 fish sampled nonrandomly from the fishery, 21% were positive for VHSV (T.R. Meyers, ADFG, report 96-0571).

NEED FOR THE PROJECT

A. Statement of Problem

Pacific herring are an injured biological resource in Prince William Sound (PWS) classified as "not recovering." Because of extreme population decline, commercial fishing for herring was severely curtailed in 1993, and closed entirely in 1994, and 1995, resulting in lost services. With slight population recovery, a limited bait fishery was reestablished in the fall of 1996, and more extensive fisheries are planned for spring 1997, including a spawn-on-kelp pound fishery. Studies from the laboratory and the pound fishery in Craig provided evidence that pounding fish may result in expression of the lethal form of otherwise latent VHSV. However, the potential threat of closed pound fisheries to the population of Pacific herring in PWS is unknown.

Pound fisheries in PWS gross about \$2 million annually, and most of the fishers live in the PWS area. If closed pounding is not allowed, one management alternative is an open-pound fishery.

For open pounding, blades of kelp are taken to areas of natural spawning, and fish are not held in nets. Open pounding has the potential to cause less stress to the fish, but pounders estimate that product value from open pounds would be only 1/2 the value from closed pounds (Torie Baker, Cordova District Fishermen United, personal communication). Without clear evidence that the pound fisheries are a threat to the resource, fishers are not willing to accept a \$1 million annual loss in receipts. However, fishers are also interested in the long term health of the population. They are willing to make changes in their fishery if solid data indicates that closed pounding is a risk to the population. Therefore, we propose detailed study of VHSV expression in pound fisheries in PWS.

In other field studies, the fungus *Ichthyophonus hoferi* was significant, particularly among older fish, and adult Pacific herring have several other parasites. However, we have no evidence that pounding has any effect of prevalence or severity of *Ichthyophonus* or any other parasites. Therefore, pound studies will focus on diagnosis of VHSV and thorough gross examination for other signs of disease. Project 97162 already has funds approved for complete necropsy of 260 fish from PWS, and results from the complete necropsies will be compared to results from proposed pound studies.

B. Rationale

This project will help restoration by providing information on role of closed pound fisheries in the expression of VHSV and the potential for virus transfer to the entire population. The project is submitted as a supplemental (emergency) proposal because results from the Craig pound fishery were not available until June, 1996, and ADFG did not determine until December 1996 that closed pounding would be allowed in PWS in 1997. If proposed 1997 studies of PWS pound fisheries find enhanced expression of VHSV, then managers can make informed decisions for the 1998 season, minimizing the potential for VHSV to inhibit Pacific herring recovery. Alternatively, if proposed 1997 studies of PWS pound fisheries find minimal expression of VHSV (e.g., handling by PWS pounders may be less stressful to fish than handling by Craig pounders), then a valuable fishery can be continued with confidence.

C. Location

Study will be done in the northern region of Prince William Sound, Alaska. Similar study is planned for Puget Sound, as part of the laboratory component of 97162 already approved (under the direction of R.M. Kocan). Information from these studies will benefit fisheries throughout the range of Pacific herring as managers consider alternatives for Pacific herring fisheries. As the resource is enhanced, fishers in these regions could potentially benefit.

COMMUNITY INVOLVEMENT

This proposal is being submitted primarily at the request of Cordova-area residents. They have expressed great interest in understanding the role of VHSV in their fisheries and in the population in general, and the attached letter indicates their willingness to participate in this study. Gary Marty met with the Cordova District Fishermen United in Cordova in April, 1996,

and he has met with several individual members since then. Gary Marty and Dick Kocan have participated in conference calls with ADFG, and at least one of these calls included local fishers. These interactions, including e-mail updates, will continue with this project.

PROJECT DESIGN

A. Objectives

The overall goal of this project is to determine the role of closed pound fisheries on the expression of VHSV, and to determine the potential for spreading the disease to the unpounded Pacific herring population in PWS. Specific objectives include:

1. Determine VHSV prevalence in fish entering into pound fisheries and of unpounded spawning fish in the population.
2. Determine time course of VHSV infection while herring are impounded.
3. Determine VHSV prevalence in dead fish in pounds.
4. Determine VHSV prevalence at the time when fish would have been released from pounds [in previous years, fish were released from the pounds, but new ADFG regulations for 1997 require that no fish be released].
5. Determine VHSV titer in water samples within and around open and closed pounds during pounding.
6. Determine if VHSV prevalence varies with capture, handling, and pounding conditions (based on visual observations by management biologists).
7. Determine the effect of age and gender on VHSV activation/expression.
8. Determine the effect of environmental conditions in pounds (dissolved oxygen, temperature, and salinity).

B. Methods

Actual commercial pounds will be surveyed during this study. This strategy has two major advantages: 1) the project does not need to purchase or lease pounds (a monetary savings to the project); 2) the results are a true reflection of what happens in pounds in the field. The disadvantage of this strategy is that scientists cannot control many of the variables of the pounds (e.g., when pounds are loaded, density of pounds, and activity in and around pounds). Given those limitations, biologists and pathologists will consult on-site to meet state objectives as closely as possible.

Data to test most of our hypotheses require sampling fish from pounds or the surrounding

population for VHSV. Evidence from Puget Sound (R.M. Kocan, personal communication) and Craig, Alaska (G.D. Marty, unpublished data) indicates that the prevalence of latent VHSV in herring populations is 10 to 15%. A sample size of 40 fish would be sufficient to find at least one VHSV+ fish in the sample if the prevalence in the population was 15% [statistical power = 0.80, $\alpha = 0.05$; Becker, 1987 #2585]. A sample size of 60 fish would be required to detect 1 fish when the prevalence was 10% (same statistical power). We anticipate greater variability between pounds than within pounds, so a sample size of 40 was chosen to increase the number of replicate pounds that can be sampled. For example, samples of 40 fish from each of three pounds is likely to provide more information than samples of 60 fish from each of only two pounds. Prevalence data for all hypotheses will be tested using contingency tables (chi-square test). Differences will be considered significant when $P > 0.05$.

To assay fish for virus, anterior kidney, spleen, and any severe skin lesions will be put in individually labeled plastic bags and stored on ice (for each fish, one bag will hold kidney and spleen, and a separate bag will be used for skin lesions). Samples will be shipped by air to the ADFG fish pathology laboratory in Juneau for analysis every 48 to 72 hours. Under the direction of Dr. Ted Meyers, isolation using EPC cell lines will be as previously described (Meyers et al. 1994). A cell line derived from Pacific herring (PHE) was used in 1995 and 1996 to attempt isolation of other, yet unknown viruses, but the PHE line has been very difficult to maintain in culture. In 1995 and 1996, VHSV was isolated more frequently on EPC than on PHE cells, VHSV was never isolated on PHE cells when EPC cells were negative, and no other viruses were isolated on the PHE cell line. To speed analysis time for virus isolation, only EPC lines will be used for isolation. Analysis of water samples will be done under the direction of Dr. Richard Kocan at the University of Washington. Methods for water analysis are similar to tissue analysis, except that 1 mL of water is placed on the EPC culture plates.

Hypotheses and sampling methods are derived from each of the objectives:

1. hypothesis - Unpounded fish (or fish being introduced into pounds) in the wild population do not express VHSV.
 - a. samples - two samples of 40 prespawning fish at time of capture (day 0); two samples of 40 spawning fish from cast net samples of spawning fish near open pounds; 160 fish total.
2. hypothesis - Prevalence of VHSV increases while herring are impounded.
 - a. samples - daily samples of 120 fish (40 from each of three pounds) from days 1, 2, 3, 4, and 5 (initially analyze on days 2 and 4; add others as needed); day 5 may also be day of release (objective 4); 600 fish total.
3. hypothesis - Fish death in pounds is associated with VHSV expression.
 - a. samples - two samples of 40 dead fish (two different pounds); 80 fish total.
4. hypothesis - Fish released from pounds have higher VHSV prevalence than fish in the wild population..
 - a. samples - five samples of 40 fish being released from five different pounds (select pounds to include a range of management strategies); 3 of 5 samples also used for

- objective 2; 200 fish total.
- b. ADFG will collect and weigh all fish in pounds, and no fish will be released after being pounded. Pound density will be qualitatively compared to VHSV prevalence in fish and water.
5. hypothesis - Closed pounds release more VHSV than open pounds.
- a. methods - Unlike other hypotheses, which will be tested on fish tissues, this hypothesis requires analysis of water samples. Samples are taken at the depth where the fish are at the time of sampling. This is done with a long tygon tube attached to a 50-mL syringe. Samples will be stored on ice in culture medium with serum and antibiotics until shipment to the University of Washington for storage in a freezer at -70°C until analysis.
 - b. samples - in the three pounds from which time course samples will be taken (#2 above), water will be sampled in triplicate on days 0, 2, 4, and 6 from four locations around each pound. Sample locations include the center of the pound, 1 m outside the pound, 5 m outside the pound, and in the middle of the nearest natural aggregate of unrestrained herring. The unrestrained herring sample will be taken at high tide, and the pound samples will be taken as soon afterwards as possible on the seaward (down current) side of the pounds. Time of high tide and time for each sample will be recorded. To summarize: 4 days × 3 pounds × 4 locations/pound × 3 replicates/location = 144 samples.
6. hypothesis - Differences in capture, handling, and pounding conditions affect the prevalence of VHSV in pounded fish.
- a. methods - Observations will be recorded by biologists and pathologists on site. Because observations will be subjective, they will not be statistically analyzed. Results may generate additional hypotheses for more refined study in 1998.
7. hypothesis - Age and gender affect VHSV expression.
- a. methods - For each fish from which samples of the head kidney and spleen are taken for virus isolation, a gross necropsy will be performed. The necropsy will be slightly less involved than the necropsy used for field-caught fish in the original proposal for 97162. The pound necropsies will include determination of age (from scales), standard length, body weight, sex, spawning status, as well as gross lesions. Gross lesions will be scored on a semiquantitative scale as none (0), mild (1), moderate (2), or severe (3). Lesions include caudal fin fraying, caudal fin reddening, fin base reddening, focal skin reddening (and ulcers), diffuse skin reddening, iris reddening, and gross evidence of *Ichthyophonus hoferi* (i.e., multiple white foci, 0.5 to 1 mm in diameter, in skeletal muscle or internal organs). Lesion scores will be compared to VHSV status using the chi-square test for association.
8. Decreased dissolved oxygen within pounds results in increased VHSV expression..
- a. samples - water temperature, salinity, and dissolved oxygen will be determined daily for each pound whenever water samples are collected for virus isolation. Dissolved oxygen will be determined inside the pounds at depths of 1 and 2 m.

The following table summarizes the daily fish sampling requirements of this study. Day 0 is the day of capture for a given pound; day 1 is the day after capture. If fish are added to pound on more than one day, the second day is used for day 0. Whenever possible, pounds chosen for sampling will have no more than a 2-day span in which fish are introduced. Filling of different pounds often spans a few days; therefore, sampling may continue over more than 6 calendar days. A minimum of one pathologist (Paul Hershberger, Univ. of Washington) and fisheries technician (ADFG, Cordova) will be dedicated to disease sampling throughout the project. Assistance averaging 4 hours per day will be provided by pounders, Gary Marty, or other ADFG biologists or technicians.

Day	Pounding status	#/sample	# replicates	total
0	unpounded (or <2h after capture)	40	2	80
1	pounded live fish	40	3	120
2	pounded live fish	40	3	120
3	pounded live fish	40	3	120
3	unpounded (spawning fish from area of open pounds)	40	2	80
4	pounded live fish	40	3	120
4	pounded dead fish	40	2	80
5	pounded live fish	40	3	120
6?	pounded live fish (or day equivalent to time of release)	40	5	200
TOTAL # Fish:				1040

Herring will be sampled randomly by gill net, purse seine, cast net, or dip net. To minimize effects of capture and holding, fish will be held no longer than four hours before necropsy. Fish for necropsy will be anesthetized in tricaine methane sulfonate (Finquel®) or killed with a sharp blow to the head. Necropsies will be done on a vessel chartered by ADFG. Paul Hershberger, a Ph.D. student in Dr. Kocan's University of Washington laboratory, will direct the sampling. An ADFG fisheries technician will be in charge of age, weight, length measurements, and date recording. Individual pounders will provide assistance on particularly busy days (e.g., days 3 and 4). Dr. Gary Marty will visit the site at least once to ensure that scoring for gross lesions is consistent with other herring field necropsies.

C. Cooperating Agencies, Contracts, and Other Agency Assistance

The University of Washington will be providing salary support to Paul Hershberger and Dr. Richard Kocan for their work on this project. Contributions by ADFG for vessel (for lodging

and sample collection), air support, and technician time on site (approximately \$21,000) are in addition to what is requested in the budget of this proposal. No other agencies are requesting funds for this section of the project, and no other agencies or universities will be contracted for this work.

SCHEDULE

A. Measurable Project Tasks for FY97

DATES (results due on final date)	ACTIVITY
April 1 - April 30, 1997	Collect field data (tissue and water samples, necropsy, and water quality data) Person in charge: Gary D. Marty, UC Davis
April 15 - June 30, 1997	Scale analysis (age); Person in charge: Mark Willette, ADFG, Cordova, AK
April 15 - Sept. 30, 1997	Virology on tissue samples; Person in charge: Ted Meyers, ADFG, Juneau, AK
April 15 - Sept. 30, 1997	Virology on water samples; Person in charge: Richard Kocan, Univ. Washington
Sept. 30 - Dec. 31, 1997:	Statistical analysis; Person in charge: Richard Kocan, Univ. Washington
Jan. 1 - April 1, 1998	Annual report Person in charge: Gary D. Marty, UC Davis

B. Project Milestones and Endpoints

Objective will be met when the annual report is completed, due April 15, 1998.

D. Completion Date

Although objectives of this study will be met on April 15, 1998, we anticipate that data from these studies will generate new hypotheses that will require a second year of similar effort to complete. Because the nature of new study is entirely dependent on findings from study in 1997, we will not be able to submit a detailed project description of desired study in 1998 until January, 1998. A second year of similar effort should be all that is necessary to answer basic questions about the role of pound fisheries in expression of VHSV.

PUBLICATIONS AND REPORTS

The annual report will be submitted to the Chief Scientist on April 15, 1998 (FY97). Information

from the annual report will be integrated into the final report, to be submitted April 15, 1999. We anticipate at least one publication from this work:

Hershberger, P., G.D. Marty, R.M. Kocan, and T.R. Meyers. Role of pound fisheries on expression of viral hemorrhagic septicemia virus in Pacific herring. Dis. Aquat. Org. Anticipated submission: Oct. 1998 (no page costs in budget).

PROFESSIONAL CONFERENCES

No funds are requested.

NORMAL AGENCY MANAGEMENT

The ADFG normally has a biologist on site during the pound fishery. During normal management activities, that biologist will be able to direct disease researchers to pounds for sampling. Expenses for transport, food, lodging, and salary for disease samplers are in addition to normal management activities; however, because of the immediate need for this information, ADFG will cover all these costs at savings to the project (approximately \$21,000).

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

This section is the same as described in the full DPD for the field component of 97162.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

This entire proposal is in addition to research and monitoring of the free-ranging population of Pacific herring in PWS. Study is necessary because expression of VHSV from pounded fish has the potential to limit population recovery. Because of the implications of this research to Pacific herring fisheries throughout the Pacific rim, managers, fishers, researchers, and peer reviewers have all given strong support for study of VHSV in pound fisheries.

PROPOSED PRINCIPAL INVESTIGATOR

Gary D. Marty

Department of Anatomy, Physiology, and Cell Biology

School of Veterinary Medicine

University of California

Davis, CA 95616

phone: 916-754-8062; FAX: 916-752-7690; e-mail: gdmarty@ucdavis.edu

PERSONNEL

Project Leader:

Gary D. Marty, D.V.M., Ph.D., and Diplomate, American College of Veterinary Pathologists, will be responsible for overseeing design of pathology studies, on-site necropsy evaluation, and final report writing. Dr. Marty has the required fisheries background (B.S. and M.S. in fisheries biology) to integrate the many parts of this study, and he performed these duties on project 94320S, 95320S, and 96162.

Other Key Personnel:

Richard M. Kocan, Ph.D., is a professor in the School of Fisheries, University of Washington. He has several years of experience working with fish toxicology and fish diseases. He is currently principal investigator of the laboratory component of the herring disease project (97162). He will oversee Ph.D. student Paul Hershberger and be responsible for virus analysis in water samples and interpretation of results. He has worked closely with Dr. Marty on this and other projects related to the *Exxon Valdez* oil spill, and that collaboration will continue with this project.

Theodore R. Meyers, Ph.D., is certified as a Fish Pathologist by the Fish Health Section of the American Fisheries Society. Dr. Meyers has been Principal Pathologist for ADFG since 1985. Dr. Meyers and the laboratories he supervises have been involved in the detection and diagnosis of VHSV in Alaskan fisheries since 1990, detecting the virus in cod and herring from PWS and in herring from other parts of Alaska. Dr. Meyers will oversee the diagnostic virology parts of this project.

LITERATURE CITED and RELEVANT PUBLICATIONS:

Becker, S., and T. Grieb. 1987. Guidance for Conducting Fish Liver Histopathology Studies During 301(h) Monitoring. U.S. E.P.A. 430/09-87-004, Washington, D.C.

Hose, J.E., M.D. McGurk, **G.D. Marty**, D.E. Hinton, E.D. Brown, and T.T. Baker. In Press. Sublethal effects of the *Exxon Valdez* oil spill on herring embryos and larvae: morphologic, cytogenetic, and histopathological assessments, 1989-1991. Can. J. Fish. Aquat. Sci.

Kocan, R.M., J.E. Hose, E.D. Brown, and T.T. Baker. In press. Pacific herring embryo (*Clupea pallasii*) sensitivity to Prudhoe Bay petroleum hydrocarbons: laboratory evaluation and in situ exposure at oiled and unoled sites in Prince William Sound. Can. J. Fish. Aquat. Sci.

Kocan, R.M., **G.D. Marty**, M.S. Okihiro, E.D. Brown, and T.T. Baker. In Press. Reproductive success and histopathology of individual Prince William Sound Pacific herring three years after the *Exxon Valdez* oil spill. Can. J. Fish. Aquat. Sci.

- Marty, G.D.,** D.E. Hinton, J. E. Hose, M.D. McGurk, and E.D. Brown. In Review. Histopathology and cytogenetics of Pacific herring larvae exposed to petroleum hydrocarbons in the laboratory or in Prince William Sound, Alaska, after the *Exxon Valdez* oil spill. *Can. J. Fish. Aquat. Sci.*
- Marty, G.D., E.F. Freiberg, T.R. Meyers, J. Wilcock, C.R. Davis, T.B. Farver, and D.E. Hinton.** 1995. *Ichthyophonus hoferi*, viral hemorrhagic septicemia virus, and other causes of morbidity in Pacific herring spawning in Prince William Sound in 1994. University of California. *Exxon Valdez Oil Spill Restoration Project Annual Report* (Restoration Project 94320S). June 1995.
- Carls, M.G., **G.D. Marty**, T.R. Meyers, D.E. Hinton, and S.D. Rice. In preparation. Immune function, expression of viral hemorrhagic septicemia virus, and mortality in pre-spawn Pacific herring (*Clupea pallasii*) exposed to weathered crude oil in the laboratory.. *Can. J. Fish. Aquat. Sci.*
- Marty, G.D., J.W. Short, D.M. Dambach, R.A. Heintz, N.H. Willits, S.D. Rice, J.J. Stegeman, and D.E. Hinton.** In press. Ascites, Premature Emergence, Increased Gonadal Cell Apoptosis, and Cytochrome-P4501A Induction in Pink Salmon Larvae Continuously Exposed to Oil-contaminated Gravel During Development. *Can. J. Zool.*
- Meyers, T.R., and J.R. Winton.** 1995. Viral hemorrhagic septicemia virus in North America. *Ann. Rev. Fish Dis.* 5: 3-24.
- Meyers, T.R., J. Sullivan, E. Emmenegger, J. Follet, S. Short, W.N. Batts, and J.R. Winton.** 1992. Identification of viral hemorrhagic septicemia virus isolated from Pacific cod *Gadus macrocephalus* in Prince William Sound, USA. *Dis. Aquat. Org.* 12:167-175.
- Meyers, T.R., S. Short, K. Lipson, W.N. Batts, J.R. Winton, J. Wilcock, and E. Brown.** 1994. Association of viral hemorrhagic septicemia virus with epizootic hemorrhages of the skin in Pacific herring *Clupea harengus pallasii* from Prince William Sound and Kodiak Island, Alaska, USA. *Dis. Aquat. Org.* 19:27-37.

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1996 - September 30, 1997

Received 1/31/97

Budget Category:	Authorized FFY 1996	Proposed FFY 1997						
Personnel		\$4.2						
Travel		\$0.0						
Contractual		\$8.7						
Commodities		\$20.6						
Equipment		\$0.0						
Subtotal		\$33.5	LONG RANGE FUNDING REQUIREMENTS					
General Administration		\$0.8	Estimated FFY 1998	Estimated FFY 1999	Estimated FFY 2000	Estimated FFY 2001	Estimated FFY 2002	
Project Total		\$34.3						
Full-time Equivalents (FTE)		0.0						
Dollar amounts are shown in thousands of dollars.								
Other Resources		see below						
Comments: - This is a supplemental project proposal to project 97162, originally funded at \$517.7K. Its purpose is to sample the Prince William Sound herring pound fishery at the time previously planned field samples are to be taken to determine whether the fishery increases the prevalence of viral hemorrhagic septicemia (VHS) in the herring population. - Additional funding will be required for the Alaska Dept. of Fish and Game and the University of California, Davis. No additional funding will be required for the University of Washington or Simon Fraser University cooperators. (Funding for project 96162 was \$635.0K; anticipated request for 98162 will be \$437.6K). - ADF&G will supplement this budget with an estimated \$21.0K from test fish fishery funds and in-kind services that will include personnel, shared air and boat charters, communications, food and housing. - Univ of Washington will supplement this budget by supplying in-kind services of personnel time (Dr. R. Kocan). - The herring pound fishers of PWS will supplement this budget by supplying in-kind services of personnel time (e.g., "pair of hands"), skiffs on site and other local support. - Results from this proposed supplemental project, together with information from Project Np./162 will have management implications for herring both within Prince William Sound and in other Pacific Rim herring pound fisheries. (Jan. 31, 1997, JRS)								

1997

1 of 11

Prepared: 1/30/97

Project Number: 97162 - Supplemental
Project Title: Investigations of Disease Factors Affecting Declines of
Pacific Herring Populations in PWS, Alaska - Pound Fisheries
Agency: AK Dept. of Fish & Game

FORM 3A
AGENCY
PROJECT
DETAIL

1/31/97

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Personnel Costs:			GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	Proposed FFY 1997	
PM	Name	Position Description						
	Vacant	Fish & Wildlife Technician II	9A	0.5	3,229	2,614	4.2	
Subtotal				0.5	3,229	2,614		
Those costs associated with program management should be indicated by placement of an *.							Personnel Total	\$4.2
Travel Costs:			Ticket Price	Round Trips	Total Days	Daily Per. Diem	Proposed FFY 1996	
PM	Name	Position Description						
Subtotal								
Those costs associated with program management should be indicated by placement of an *.							Travel Total	\$0.0

1997

Project Number: 97162 - Supplemental
 Project Title: Investigations of Disease Factors Affecting Declines of
 Pacific Herring Populations in PWS, Alaska - Pound Fisheries
 Agency: AK Dept. of Fish & Game

**FORM 3B
 Personnel
 & Travel
 DETAIL**

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:		Proposed
Description		FFY 1997
CONTRACTOR No. 1: University of Washington - No additional funding is required for this task		0.0
CONTRACTOR No. 2: University of California - Davis		8.7
CONTRACTOR No. 3: Simon Fraser University --No addtional funding is required for this task.		0.0
When a non-trustee organization is used, the form 4A is required.		
Contractual Total		\$8.7
Commodities Costs:		Proposed
Description		FFY 1997
Supplies for analysis of tissue samples for virus (1040 samples @ \$20/sample)		20.1
Shipping for supplies and tissue samples to Juneau and water samples to Seattle (Alaska Airlines Goldstreak Service)		0.5
Commodities Total		\$20.6

1997

Project Number: 97162 - Supplemental
 Project Title: Investigations of Disease Factors Affecting Declines
 of Pacific Herring Populations in PWS, Alaska - Pound Fisheries
 Agency: AK Dept. of Fish & Game

FORM 3B
Contractual &
Commodities
DETAIL

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

New Equipment Purchases:		Number of Units	Unit Price	Proposed FFY 1997
Description				
Those purchases associated with replacement equipment should be indicated by placement of an R.		New Equipment Total		\$0.0
Existing Equipment Usage:		Number of Units	Inventory Agency	
Description				
Scale readers, computers, complete pathology laboratory				

1997

Project Number: 97162 - Supplemental
 Project Title: Investigations of Disease Factors Affecting Declines
 of Pacific Herring Populations in PWS, Alaska - Pound Fisheries
 Agency: AK Dept. of Fish & Game

**FORM 3B
 Equipment
 DETAIL**

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Budget Category:	Authorized FFY 1996	Proposed FFY 1997						
Personnel		\$2.9						
Travel		\$0.8						
Contractual		\$0.0						
Commodities		\$3.0						
Equipment		\$0.8	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	\$0.0	\$7.5	Estimated FFY 1998	Estimated FFY 1999	Estimated FFY 2000	Estimated FFY 2001	Estimated FFY 2002	
Indirect		\$1.2						
Project Total	\$0.0	\$8.7						
Full-time Equivalents (FTE)		0.0						
Dollar amounts are shown in thousands of dollars.								
Other Resources								
Comments: Indirect costs include the standard overhead rates and applications for the Institute of Toxicology and Environmental Health at the University of California, Davis (18.9%).								

1997

Prepared: 1/30/97

8 of 11

Project Number: 97162 - Supplemental
Project Title: Investigations of Disease Factors Affecting Declines of
Pacific Herring Populations in PWS, Alaska - Pound Fisheries
Name: Contractor 2 - University of California - Davis

**FORM 4A
Non-Trustee
SUMMARY**

1/31/97

October 1, 1996 - September 30, 1997

[illegible]

1997

9 of 11

Project Number: 97162 - Supplemental
Project Title: Investigations of Disease Factors Affecting Declines
of Pacific Herring Populations in PWS, Alaska - Pound Fisheries
Name: Contractor 2 - UCD

FORM 4B
Personnel
& Travel
DETAIL

431/97

October 1, 1996 - September 30, 1997

Contractual Costs:	Proposed
Description	FFY 1997
Contractual Total	\$0.0
Commodities Costs:	Proposed
Description	FFY 1997
Supplies for analysis of water samples for virus (144 samples @ \$20/sample)	2.9
ITEH supplies	0.1
Commodities Total	\$3.0

1997

Project Number: 97162 - Supplemental
Project Title: Investigations of Disease Factors Affecting Declines
of Pacific Herring Populations in PWS, Alaska - Pound Fisheries
Name: Contractor 2 - - UCD

FORM 4B
Contractual &
Commodities
DETAIL

October 1, 1996 - September 30, 1997

1997

11.8.2F

Cordova District Fishermen United

PO Box 929 - Cordova, AK 99574

Phone: 907-424-3447 FAX: 907-424-3449

RECEIVED

FEB 10 1997

January 31, 1997

To: James Brady
Alaska Dept. of Fish & Game
333 Raspberry Road
Anchorage, AK 99518

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Fr: Torie Baker & Kim Ewers *Torie Baker* *Kim Ewers*
Co-chairs, Herring Pound Division

Re: 1997 PWS Herring Research

This letter is to voice our support for expansion and supplementation of the 1997 EVOS Trustee Council project. The Role of Pacific Herring Pound Fisheries on Expression of VHS Virus in Prince William Sound. We have reviewed the proposed revisions of the herring disease sampling and lab analysis for 1997. We feel that this revision will greatly enhance our understanding as to the possible impact this gear may be having on the recovery of herring stocks.

As the herring crash of 1992 and 1993 played out, the Trustee Council did respond, largely at our behest, with the disease pathology work. The EVOS work to date is having wide spread effects on the fisheries management both within and outside the Sound. Obviously, we are now at a new juncture. With the first harvest opportunity in almost 4 years, as you are well aware, fishermen and the Department need to maximize this opportunity to gain as much understanding as possible as to how this gear type as operated in PWS may be affecting the recovery of the herring stocks.

We feel that the proposed changes in this project are very timely and to include the analysis of PWS closed pound operations elevates the usefulness and relevance of the research. It is very exciting to see the Trustee research efforts dovetailing with the Department's own efforts to properly manage the fisheries. We in the PWS fleet stand ready to further assist the Department and the research team's efforts in any way possible. We look forward to having them on the grounds in April.

cc: Joe Sullivan, ADFG
Bill Hauser, ADFG
Dan Sharp, ADFG
Gary Marty, UC Davis

Documentation of Herring and Other Forage Fish Natural History through Local and Traditional Ecological Knowledge

Project Number: 97248

Restoration Category: Research

Proposer: Jody Seitz and Evelyn Brown
University of Alaska Fairbanks

Lead Trustee Agency: Alaska Department of Fish and Game

Cooperating Agencies: None

Alaska SeaLife Center: No

Duration: 1st year, 2-year project

Cost FY 97: \$46,900

Cost FY 98: \$76,200

Cost FY 99: 0

Geographic Area: Prince William Sound, Lower Cook Inlet, Kodiak

Injured Resource/Service: Herring, subsistence

RECEIVED
FEB 10 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

ABSTRACT

This project will collect historical and contemporary knowledge about the ecology of herring and other forage fish. A comprehensive literature review and primary archival records search will complement in-person interviews of individuals and groups regarding the distribution of herring and other forage fish. The project will reconstruct a historical overview of the natural history of herring in Prince William Sound, lower Cook Inlet, and Kodiak. Researchers will map information on their distribution, create an ascii file of mapped data, and create a subject index of textual information on the ecology and life cycle of the fish by species. Data and reports will be provided to affiliated research projects, particularly the Sound Ecosystem Assessment Herring project (\320T), and the Alaska Predator Ecosystem Experiment project (\163).

INTRODUCTION

The project will compile ecological knowledge about herring and other forage fish from residents of the spill-affected region. This knowledge will assist PIs researching questions about the life cycle, distribution, and ecological characteristics of herring and other forage fish. The project's focus will be on herring; information on other forage fish will be documented as the opportunity arises. A variety of sources indicate that resource users have extensive and valuable ecological knowledge about a number of species, including forage fish species. To date, a pilot program has been undertaken by the UAF SEA/herring program. The program has interviewed 18 fishermen, pilots, and other residents of Cordova regarding the distribution of herring, pollock, and other forage fishes throughout the Sound over the year. Project 97248 would interview residents of 10 spill-area communities, including some additional residents of Cordova.

NEED FOR THE PROJECT

A. Statement of Problem

Historical data from official published sources regarding the distribution of herring and other forage fish throughout Prince William Sound is limited. Principal investigators of both the SEA and APEX ecosystem projects are interested in the seasonal and interannual locations of herring and other forage fish as factors in their survival and recovery from the oil spill. It is not possible to study the whole sound simultaneously or know the historical distribution of fishes solely through existing data. Therefore, SEA and APEX Principal Investigators want to know what long-time residents and resource users know about the natural history and ecology of these species in the spill area. Residents may share knowledge of historical patterns of distribution and population size for several forage fish species. This information may provide researchers with greater perspective on current populations and the factors that influence their populations.

Herring distribution may vary with abundance: In years of high abundance, herring populations may occur over a broader area and range of habitats. In years of low abundance, they may occupy more limited habitats. Herring researchers are examining the historic literature on herring catch, age structure, size at age, and distribution. They also hope to obtain historic long term datasets on herring energetics or oil content if possible. They will arrange the historic environmental data sets to best match current environmental inputs that correlate with changes in herring growth and survival they have observed. They will use the historic data to compare actual population structure, distribution and year class strength to hindcast model results for the following SEA models: 1) Herring Overwintering; 2) Larval Drift; and 3) Trophodynamics. (Evelyn Brown, personal communication 2/6/97) In other words, data from this project will assist SEA herring researchers in assessing populations and habitats for herring and over a longer period and broader area than can be known solely through existing records and current data collection efforts.

Researchers with APEX bird research projects are interested in any basic life history information, seasonal occurrence, schooling characteristics, relative abundance over the past twenty years or

more, predators of sandlance, and overall, how important residents believe sandlance are as forage fish in Prince William Sound. (Rob Suryan, personal communication April 3, 1996)

These two large ecosystem projects require similar types of data obtained by interviewing the same groups of people and individuals. Researchers from both projects have expressed interest in having a single project gather information about forage fish and herring. This project will decrease duplication of effort in research projects and decrease the survey burden on communities and individuals. We will document the distribution of herring which community residents recall from their outdoor activities and shared cultural experiences and beliefs. Researchers will seek information regarding juvenile and adult herring, spawn, and other forage fish distribution. We will document time period, season, proximity to shore, association with other species such as birds and marine mammals, and the way in which respondents were able to make their observations.

B. Rationale/Link to Restoration

The work will contribute contemporary and historical data on the distribution of herring and other forage fish. The distribution of these fishes is an important question in the overall effort to understand ecosystem processes affecting the production and recovery of injured resources such as salmon, herring, birds, and marine mammals. In particular there may be nursery areas which provide critical habitat to developing juvenile fish, and the location of certain forage fishes may be important in the recovery of seabirds and marine mammals (Tyler and Haldorson 1995; Brown 1996; Draft 1996 Restoration Project Abstracts).

C. Location

The project will take place in Cordova, Valdez, Chenega Bay, Seward, Tatitlek, Kodiak, Homer, Port Graham, Seldovia, and Nanwalek. In FY 97, we expect to be able to complete the work in four communities (Cordova and three others), and complete a report of the first year's research by April 15 of 1998. Performance of the project in all communities requires community approval, or, in the case of larger towns, endorsement by the appropriate organizations. We will carry out interviews only where the communities express interest and desire to participate.

COMMUNITY INVOLVEMENT

Researchers plan to combine data gathering with teaching the interview technique and methods to students in the Youth Area Watch in order to expand the data gathering effort through student/elder interviews. This project coordinates the collection of information about herring and other forage fish from locals and resource users throughout the spill area. As part of the project, the principal investigator will present the project to city and village councils for approval, and work with community facilitators to engage participants for the project. No vessels or special equipment are required for this project.

We estimate that in the smaller communities the number of participants will average between

five and seven, but are likely to take more time on average than the interviews in Cordova. Eighteen referrals exist in Cordova. These estimates are pending community approval and individual consent. The overall estimate of participants is 75 over the two-year life of the project.

Herring is a critical resource for subsistence, commercial, and recreational uses throughout the spill area. In early spring, children fish for herring with rod and reel, and fishermen set out small subsistence nets for herring to use as bait for winter kings. Spawning activity around Tatitlek draws the community out to the beaches to pick spawn for home use. The annual spawning event evokes the very essence of spring, and marks the end of winter. The commercial herring fisheries brought new vitality to local economies around the Sound. The 1993 population crash of Prince William Sound herring brought a halt to much of this activity and increased the uneasiness residents feel regarding the long term effects of the spill. This project provides an opportunity for residents to be part of the effort to help herring recover, and in so doing, puts them in contact with researchers and information about this critical resource.

PROJECT DESIGN

A. Objectives

1. Collect, organize, and disseminate historical and contemporary ecological knowledge about herring and other forage fish held by residents of the region.
2. Assist researchers in incorporating this ecological knowledge about fish in their current projects. It will provide valuable perspective on current conclusions being drawn from contemporary data collection efforts. The data may also help researchers determine important areas or habitat on which to focus in their data collection efforts.

B. Methods

The project will follow the TEK protocols adopted by the *Exxon Valdez* Oil Spill Trustee Council. The principal investigators will work with the Traditional Ecological Knowledge Specialists hired under Project 97052B, Drs. Henry Huntington and Pam Colorado. Dr. Huntington will advise the project on methods and analysis and provide assistance as needed. Dr. Colorado will be consulted on analysis and protocols in representing and interpreting traditional knowledge as the project progresses.

The PIs will work with the community facilitators (Project 97052A) to present the project to the small communities and resource user organizations in larger towns. Participants will be paid \$20/hour. Individuals wishing to be credited for the information they contribute will be credited in follow-up reports and publications. The project will use mapping interviews to document the historical and contemporary distribution of forage fishes and herring. Interviews will be accompanied by notes and tape recorded if the participants agree to it. Respondents will be those known in the spill area for having extensive knowledge of the resources. Interviews will be carried out with pilots, hunters, fishermen, and subsistence users throughout the spill area.

Researchers will map seasonal and interannual fish distribution on nautical charts. The data will be compiled into ascii files and represented in a geographic information system such as Arc Info for use by the SEA herring project, other researchers and community residents. The project will rely on interviews with some structured and some open questions to allow a broad range of information to be recorded. Notes will be indexed by subject and location. An accompanying report will present summaries of ecological information contributed by respondents for distribution to scientists, communities, and other interested parties.

C. Cooperating Agencies, Contracts, and Other Agency Assistance

The APEX project, with the National Oceanic and Atmospheric Association, and the University of Alaska Fairbanks Herring Program, through the Alaska Department of Fish and Game, anticipate using the information collected by this project.

SCHEDULE

A. Measurable Project Tasks

FY 97

April

Notify Homer, Tatitlek, and Chenega Bay of the project at village council meetings. (NOTE: Choice of communities is tentative pending community approval of participation in the project.)
Meet Youth Area Watch students in Tatitlek to solicit interest in participating.
Interview Cordova participants.

May

Interview Homer participants - three day stay.
Chenega Bay - group interview of participants - three day stay.
Teach Tatitlek students the interview method.
Finish interviewing Cordova participants.

June

Create ascii data files of chart data.
Enter and index qualitative data from surveys.
Hire tech to help transcribe and enter data.
Arrange for GIS specialist to work on maps.
Visit Tatitlek to collect completed maps.

July

Give GIS specialist the data for the maps.
Continue entering and indexing qualitative data.
Create tables of places, seasons, years, of observations.

August

Compile, sort, and analyze qualitative data.
On a community by community basis, analyze chart data.
Work with GIS specialist to prepare maps for report.

	Begin community reviews.
September	Community reviews.
<u>FY98</u>	
October	Introduce project in Valdez, Kodiak, Seldovia, Port Graham, and Nanwalek at village council meetings or appropriate tribal council meeting. In Kodiak, see existing referrals and meet with fishing organizations.
November	Meet with respondents in the above communities. Teach Nanwalek and Port Graham Youth Area Watch students how to do the interview. Ask them to interview referrals we are unable to interview in their communities.
December	Check on Youth Area Watch progress. Enter data from charts in tables Enter data from charts into ascii data files.
January	Data entry from charts into tables. Data entry from charts into ascii data files. Collect all work from YAW students.
Feb-Mar	Finish community interviews. Hire technical assistant. Transcribe and index qualitative data. All chart data to GIS specialist.
April	EVOS first year annual report.
April-May	Analyze qualitative data. Analyze GIS maps as they come back.
June	Begin report writing.
July-Aug	Begin community reports. Report writing continues
September	Finish Community reports. Submit articles for journal publication.

B. Project Milestones and Endpoints

June 1, 1997 All first year interviews completed

July 1, 1997	All ascii file data to GIS specialist
August 15, 1997	Distribute draft community reports for review
September 30, 1997	Complete community reviews
November 30, 1997	Complete community reports from first year
	Make initial community contact for year-2 research
March 31, 1998	Complete year-2 interviews
June 30, 1998	Distribute draft community reports for review
September 30, 1998	Complete community reviews
	Submit articles for journal publication

We will consider that sufficient information has been collected to meet our goals pending consultation with the EVOS TEK specialists, the Principal Investigators for the herring and forage fish projects, contributors in each community, and community reviews.

C. Completion Date

September 30, 1998

The project will be complete once the respondent information is compiled into a notes database, the map data is in ascii files, and the final report is delivered to APEX and to SEA herring researchers.

PUBLICATIONS AND REPORTS

Manuscript for publication will be submitted to ARCTIC by December 1998. Reports will be turned into the EVOS Trustee Council on the required schedule.

PROFESSIONAL CONFERENCES

Results of the project will be presented at the Alaska Anthropological Association meeting Spring 1998.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

The purpose of this project is to coordinate the gathering of information on fish species of interest to two large ecosystem projects funded by the Trustee Council - APEX and SEA. The project will incorporate questions about fish ecology, biology, and distribution to serve both projects.

PROPOSED PRINCIPAL INVESTIGATORS

Jody Seitz and Evelyn Brown
University of Alaska Fairbanks Herring Program
P.O. Box 2694
Cordova, Alaska 99574
phone: 907-424-5916
fax: 907-424-5906
e-mail: jody@grizzly.pwssc.gen.ak.us

PERSONNEL

Jody Seitz, UAF Herring Program

Ms. Seitz has five years' experience conducting research on resource harvests, ecology, and regulatory issues for the Subsistence Division of the Alaska Department of Fish and Game -- beginning in 1989, and focusing on Prince William Sound from 1991 until 1994. She has extensive experience conducting social science research in the communities of Prince William Sound. She collected much of the first year's harbor seal notes for Project 94244. From June 1994 until December 1995 she disseminated scientific information to the public from the Sound Ecosystem Assessment (Project \320), through the SEA Bulletin, news articles and columns in regional newsletters. She is familiar with the data needs of the APEX and SEA projects through her work as a science journalist. She writes and produces Alaska Coastal Currents (the Trustee Council's radio show), currently broadcast through all the public radio stations throughout the spill area.

Education:

M.S. 1989, Rural Sociology
University of Wisconsin-Madison
B.A. 1980, Magna cum laude, Anthropology
Beloit College

1997 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1996 - September 30, 1997

Budget Category:	Authorized FFY 1996	Proposed FFY 1997							
Personnel		\$0.0							
Travel		\$0.0							
Contractual		\$43.8							
Commodities		\$0.0							
Equipment		\$0.0							
Subtotal		\$43.8	LONG RANGE FUNDING REQUIREMENTS						
General Administration		\$3.1	Estimated FFY 1998	Estimated FFY 1999	Estimated FFY 2000	Estimated FFY 2001	Estimated FFY 2002		
Project Total		\$46.9	\$76.2	\$0.0	\$0.0	\$0.0	\$0.0		
Full-time Equivalents (FTE)		0.0							
Dollar amounts are shown in thousands of dollars.									
Other Resources									

1997

1 of 11

Prepared: 2/6/97

Project Number: 97248

Project Title: Documentation of Herring and Other Forage Fish
Natural History through Local and Traditional Ecological Knowledge
Agency: AK Dept. of Fish & Game

**FORM 3A
AGENCY
PROJECT
DETAIL**

2/7/97

FY 97 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Budget Category:	Proposed FFY 1997	FFY 1998						
Personnel	\$14.0							
Travel	\$7.5							
Contractual	\$8.2							
Commodities	\$2.3							
Equipment	\$3.0							
Subtotal	\$35.0		LONG RANGE FUNDING REQUIREMENTS					
Indirect (25%)	\$8.8			Estimated FFY 1998	Estimated FFY 1999	Estimated FFY 2000	Estimated FFY 2001	Estimated FFY 2002
Project Total	\$43.8			\$71.2	\$0.0	\$0.0	\$0.0	\$0.0
Full-time Equivalents (FTE)	0.3							
Dollar amounts are shown in thousands of dollars.								
Other Resources								
Comments: Contractual includes 35 participants paid \$20.0/hr an estimated 6 hours on average. This is entirely contingent on community approval, and for planning purposes only. Travel assumes the Pls will work with the communities of Tatitlek, Chenega Bay, and Homer during FY 97 -- this, too, is contingent on community approval.								

1997

Prepared: 2/7/97 4

Project Number: 97248

Project Title: Documentation of Herring and Other Forage Fish
Natural History through Local and Traditional Ecological Knowledge
Name: Jody Seitz and Evelyn Brown, UAF

FORM 4A
Non-Trustee
Summary

2/7/97

FY 97 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Personnel Costs:			GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	Proposed FFY 1997	
PM	Name	Position Description						
	Seitz	PI		3.0	4,000		12.0	
		Technician (data entry)		1.0	2,000		2.0	
Subtotal				4.0	6,000	0		
Those costs associated with program management should be indicated by placement of an *.							Personnel Total	\$14.0
Travel Costs:			Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FFY 1996	
PM	Description							
	CDV-Homer		\$400	3	6	100	1.8	
	CDV-Tatitlek		\$320	3	6	100	1.6	
	CDV-Chenega Bay		\$900	3	6	100	3.3	
	CDV-Anchorage		\$200	2	4	100	0.8	
							0.0	
							0.0	
							0.0	
Those costs associated with program management should be indicated by placement of an *.							Travel Total	\$7.5

FY 97

Project Number: 97248

Project Title: Documentation of Herring and Other Forage Fish
Natural History through Local and Traditional Ecological Knowledge

Name: Jody Seitz and Evelyn Brown, UAF

FORM 4B
Personnel
& Travel
DETAIL

FY 97 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:		Proposed
Description		FFY 1997
GIS specialist		4.0
Local participants (35 participants x \$20/hr. x 6 hr/each)		4.2
Contractual Total		\$8.2
Commodities Costs:		Proposed
Description		FFY 1996
phone, fax		0.8
mylar, maps		1.0
printing, copying (community reports)		0.5
Commodities Total		\$2.3

1997

3 of 4

Project Number: 97248

Project Title: Documentation of Herring and Other Forage Fish
Natural History through Local and Traditional Ecological Knowledge

Name: Jody Seitz and Evelyn Brown, UAF

FORM 4B
Contractual &
Commodities
DETAIL

2/7/97

October 1, 1996 - September 30, 1997

1997

FORM 4B
Equipment
DETAIL

DELIGHT AND DESIRE LAKES RESTORATION PROJECT

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APR 12 1996

Project Number: 97254

Restoration Category: General Restoration

Proposer: Lower Cook Inlet Fisheries Development Association.
PO Box 2421, Homer, Alaska 99603.
907-235-4140

Lead Trustee Agency: Alaska Department of Fish and Game, Commercial Fisheries
Management and Development Division and the Regional
Limnology Laboratory, Soldotna.

Cooperating Agencies:
Alaska SeaLife Center:

Duration: 6 Years

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Cost FY/97: \$123,100 Phase one.

Cost FY/98: \$96,100 Second Year if necessary. ADMINISTRATIVE RECORD

Cost FY/99: Phase two of the project would depend on the results of phase one
(research & pre-fertilization study) and budget projections will be
determined by the end of FY/98.

Cost FY/00:

Cost FY/01:

Geographical Area: On the Outer Gulf Coast of The Kenai Peninsula on The Eastern
Shore of McCarty Fiord of East Nuka Bay.

Injured Resource/Service: Wild stock Sockeye Salmon and Commercial Fishing.

ABSTRACT

The proposed project would increase the quality of the rearing habitat through lake fertilization. Application of liquid fertilizer would increase the forage base for rearing sockeye salmon fry through nutrient enrichment. The expected result would be larger, younger and more numerous sockeye smolt with a corresponding increase in marine survival rates. The enrichment program would accelerate the recovery of the currently depressed wildstock sockeye salmon of Delight and Desire Lakes.

INTRODUCTION

The outer district of the Kenai Peninsula has many salmon stocks that are important to the region's wildstock salmon ecology as well as the areas local commercial salmon fishery. The Delight and Desire Lake sockeye salmon are the only wild sockeye salmon found in the outer district that are of commercial importance. Delight and Desire Lakes are located in the East Arm of Nuka Bay (McCarty Fiord) approximately 77.0 km southwest of Seward and 70 km. east of Homer (Figure 1&2). Both lakes are termed oligotrophic (a term describing lakes with low nutrient levels and are often poor in nitrogen, phosphorus and calcium). Delight lake is approximately 272 hectares in size with a maximum depth of 40 meters and Desire Lake is 162.5 hectares and the depth is unknown. Both lakes have outlet streams that empty into McCarty Fiord.

It has been documented that the *Exxon Valdez* Oil Spill caused heavy oiling to the beaches and near shore waters at the entrance to McCarty Fiord. Light oiling has been documented near the outlet streams of Delight and Desire Lakes (ADNR, 1989). Sockeye salmon and lost fishing time has been identified as injured resources and services respectively by the *Exxon Valdez* Trustee Council (EVTC).

The Delight and Desire Lake sockeye salmon stocks have historically supported a much higher annual catch in the East Nuka Subdistrict. Reduced fishing time may be demonstrated through the commercial sockeye catches of the East Nuka Bay Subdistrict. The commercial sockeye catch has averaged only 5,750 sockeyes annually since 1991 (the first year adult sockeye returned from the 1989 smolt outmigration). Prior to 1989, the 20 year average catch was 23,100 fish (Figure 3). In addition, Delight Lake has remained closed to commercial fishing since 1992 in an attempt to achieve the minimum escapement goal of 10,000 fish (ADF&G, 1994). The FY/96 work plan prepared by the *Exxon Valdez* Trustee Council lists sockeye salmon as an injured biological resource that is not recovering.

Recent Federal land transfers have resulted in Delight and Desire Lakes being transferred to the Port Graham Corporation. Pat Norman, president of the Port Graham Corporation, has advocated and supported this project through the Lower Cook Inlet Seiners Association and the Lower Cook Inlet Fisheries Development Association (Appendix A).

NEED FOR THE PROJECT

A. Statement of the Problem

The targeted resource is the wildstock sockeye salmon of Delight and Desire Lakes. Catches of sockeye salmon in the East Nuka Subdistrict have averaged only 5,750 fish since the first return of adult salmon after the 1989 oil spill. This compares to an average annual catch of 23,100 fish

for the years 1971 through 1990 (Figure 3). The Aialik Bay sockeye catch has also experienced similar results since 1991 (Figure 4). Aialik Bay is also located on the outer coast of the Kenai Peninsula approximately 20 km southwest of Seward and 32 km northeast of Delight and Desire Lakes (Figure 2). The beaches and near shore waters to the entrance of Aialik Bay, including the narrow passages and capes, were heavily oiled during the *Exxon Valdez* Oil Spill (ADNR, 1989). For the Aialik Subdistrict, during the years 1979 through 1990, the average annual catch is estimated to be 12,900 sockeyes, while the average catch since 1991 (the first year adult sockeye returned from the 1989 smolt outmigration) averaged only 1,600 sockeyes (Figure 4).

In addition to lost fishing time to the commercial fishery and inadequate adult escapements, is the possible effect that the sockeye salmon population decline may have on the sport fishery. Sport fishing effort has increased steadily for the past several years near the outlets of Delight and Desire Lakes. The eastern shore of East Nuka Bay is a popular location for sport fishing charter operations as well as a popular remote fly-in sport fishery.

The benefits realized from the lake enrichment project would help restore the wild stocks of sockeye salmon in Delight and Desire Lakes as well as increase, to former levels, the commercial catches of East Nuka Bay.

This proposal is constructed in two phases. Phase one (pre-fertilization phase) will last one year, two years depending on the results of the first year. Phase one would prepare a comprehensive limnological inventory and survey of Delight and Desire Lakes. Phase two would actually apply fertilizer for nutrient enrichment and would last an additional three years. The proposers realize that if phase one reveals that one or both of the lakes would benefit from nutrient enrichment, an additional financial source would be required to finance the annual cost of fertilization outside the time frame of this proposal. Currently, fishery enhancement projects in Lower Cook Inlet are financed by revenue generated by selling fish caught in special harvest areas. These areas, set up by the Cook Inlet Regional Aquaculture Association and the local commercial fishing fleet, are areas where fishermen can sell the fish they catch and use the revenue to fund annual fishery enhancement programs. By expanding the scope and revenue goal of one or more of these areas, additional revenue may be available to fund the annual fertilization costs. Eventually, increased escapements and decomposing carcasses may increase nutrient recycling and reduce annual fertilization requirements.

The lake enrichment program would not impact existing or future land and water uses. The liquid fertilizer used is designed to prevent eutrophication or over growth of algae in the lake and is not harmful to people or wildlife.

B. Rationale/Link to Restoration

Investigations were not performed to directly link oil spill injury to salmon survival (fry or adult) in the East Nuka Bay area and is often difficult to correlate oil spill damage to depressed salmon stocks. Mark Willette (ADF&G 1994) has found, however, that pink salmon fry growth rates were reduced when exposed to oil contamination for up to three years after the *Exxon Valdez* Oil Spill in the marine environment in Prince William Sound.

Although no definitive and absolute link to damage from the oil spill can be developed for the Delight and Desire Lakes sockeye salmon stocks, this restoration project has potential to accelerate the recovery of these currently depressed stocks. Lake enrichment would provide an increased forage base for rearing sockeye fry and could be expected to produce larger and more numerous sockeye smolt with increased marine survival rates.

For FY97, phase one of the restoration project will include research into the limnological characteristics of the lakes to determine feasibility to the proposed restoration plan. ADF&G guidelines mandate that a 1-2 year pre-fertilization study be conducted before commencing with any nutrient enrichment program. Objectives would include a comprehensive survey of physical and chemical characteristics, plankton abundance, and biological parameters of Delight and Desire Lakes. In addition, the spring and summer outmigration of sockeye salmon smolts would be monitored to assess size and age at emigration. This survey would be completed during the 1-2 year research and feasibility phase of the project and used to determine suitability of the lakes to nutrient enrichment.

Phase one of the project (research and monitoring) would determine the feasibility and the potential that Delight and Desire Lakes have to lake enrichment as well as the make up, amount and where and when to apply the fertilizer. The first phase would also determine the capability that the restoration action has to accelerate recovery of the depressed stocks. The ultimate objective of this project (phase two) is to restore production of adult sockeye salmon to pre spill levels by producing larger, younger and more numerous smolts.

B. Location

Delight and Desire Lakes are located in the East Arm of Nuka Bay (McCarty Fiord) on the Eastern Kenai Peninsula approximately 77.0 km southwest of Seward and 70 km east of Homer (figure 2). Communities that would benefit from the proposed project include the villages of Port Graham, Nanwalek and Seldovia as well as Homer and Seward. Sport fishers statewide may benefit by the increased numbers of returning fish.

COMMUNITY INVOLVEMENT

This project concept has been reviewed at the Lower Cook Inlet Seiners Association meeting in December 1995. Support for the project was unanimous as well as general support approved by the Villages of Port Graham and Nanwalek. Although no other public informational meetings on this project have been held at this time, it is anticipated that this sockeye salmon restoration project will create support from the general public in Lower Cook Inlet.

PROJECT DESIGN:

A. Objectives

Objectives of Phase one would include a thorough feasibility study of both lakes to determine suitability of one or both lakes for a nutrient enrichment program. The study would provide detailed assessments of the physical, chemical and biological aspects of the lakes so that lake enrichment criteria can be applied to determine if the lakes would benefit from the proposed fertilization project. Phase one of the project would follow the guidelines established by the Alaska Department of Fish and Game and the readers are referred to "Policy and Guidelines For Lake Fertilization" (ADF&G, 1979).

Limnological classifications have been developed by Koenings and Burkett (ADF&G, 1989) that classify lakes as recruitment-limited or rearing-limited with respect to which enhancement strategy would be appropriate. Considering their work and the limited work done on Delight and Desire Lakes by ADF&G in the early 1980's, the two lakes appear to be classified as rearing-limited. For example, the escapement levels prior to 1989, and spawning areas for both lakes do not appear to be the limiting factor restricting adult production. (ADF&G, 1994). In fact, juvenile sockeye production is not an exclusive function of spawner density in sockeye salmon nursery lakes but also includes a high quality rearing environment, Kyle, G. B. (ADF&G, 1994).

Koenings and Burkett (ADF&G, 1987a) have also linked one physical feature of lakes to the base of the food chain with respect to sockeye salmon production. That is the euphotic volume ([EV], the upper levels of the lake down to the effective light penetration for photosynthesis). Knowing the EV, sockeye fry/smolt production objectives can be established. From their work, Koenings and Burkett have developed a stocking model (110,000 spring juveniles, 23,000 smolts, 2,500 adults) that uses the number of EV units unique to each lake to estimate expected production. With the aforementioned model and classification we can proceed with the pre-enhancement study with the following defined objectives.

Lake selection criteria

1. Food supply must limit salmonid growth (rearing limited) during the fresh water rearing period life cycle during some or all of the growing period.
2. For nutrients to be available to the phytoplankton, the following should be fulfilled:
 - A. The mean depth of the lake should be greater than the euphotic zone.
 - B. The epilimnion should be less than twice the depth of the euphotic zone.
 - C. The flushing rate of the epilimnion should have a flushing rate of a year or more.
 - D. Shoreline should be steep with little vegetation.
 - E. Light penetration should not limit primary production and turbidity should be low.
3. Nutrient enhancement is compatible with existing water usage.
4. ADF&G must be able to monitor, manage and evaluate the adult return.
5. Existing fry densities should be high enough (300-400 fry per hectare). Lower densities would increase costs.
6. Spawning areas should be large enough to accommodate increased number of spawners.
7. Predator numbers should not limit salmonid production.

Feasibility Sampling

The following parameters will be sampled and measured following procedures in the "Limnological Field and Laboratory Manual: Methods For Assessing Aquatic Production" (ADF&G, 1978).

1. Physical parameters
 - A. Water flow
 - B. Lake mapping for depth contours and volume estimates.
 - C. Light penetration.
 - D. Other factors such as temperature regimes and turbidity.
2. Chemical parameters
 - A. Water sampling once per month and evaluated per limnological field and laboratory guidelines.
3. Biological parameters
 - A. Primary production i.e.: phytoplankton sampling, should be done once per month.
 - B. Secondary production i.e.: zooplankton sampling, should be done once per month.
 - C. Tertiary production i.e.: adult salmon production is to be enumerated.

4. Determine the water residence time of Delight and Desire Lakes.

Water discharge will be measured in the outlet streams twice during low, medium and high flow periods. Water level in the lakes will be measured at the same time and a relationship will be developed between the two variables to establish a flushing rate throughout the pre-fertilization phase.

Pre-Fertilization Study

The objectives of the pre-fertilization study involves the detailed monitoring of the physical, chemical and biological factors of the lake. Many of the objectives with the pre-fertilization study are similar to the objectives of the criteria used to select lakes for nutrient enrichment. The pre-fertilization phase will last a minimum of 1-2 years. The data base accumulated during the pre-fertilization study will be used to determine suitability of the lakes to nutrient enrichment and when phase two is implemented, the data base would be used to evaluate the success of the fertilization project.

Phase two (Lake Fertilization)

The goal of Alaska's lake enrichment program is to increase the zooplankton biomass without negatively altering the zooplankton species composition or changing the lake's oligotrophic state Kyle G. B. (ADF&G, 1994). The objectives of the Delight and Desire Lake enrichment program would not differ from those established by the Department of Fish and Game. The objectives, through lake fertilization, would develop a higher quality rearing environment and increase smolt production.

Based on the results of phase one (pre-fertilization study) a prescribed amount of liquid fertilizer ($\text{mg P/m}^2/\text{week}$) would be applied to all or a particular area of the lake surface either by aircraft using a crop duster technique or by a boat and pump system. The application period would likely commence when the water temperature reaches 5°C (June 1st-10th) and last until approximately September 1. For a remotely located area such as Delight and Desire Lakes, aerial application would be the least expensive, if topographically safe for aircraft.

B. Methods, Phase one (lake selection and pre-fertilization phase)

Methodology of phase one of the project would follow the guidelines established by the Alaska Department of Fish and Game and the readers are referred to "Policy and Guidelines For Lake

Fertilization" (ADF&G, 1979) and "Limnological Field and Laboratory Manual: Methods For Assessing Aquatic Production" (ADF&G, 1978). In addition, all proposed sampling schemes and survey programs will be reviewed and approved by the limnology section of ADF&G. The proposers assume that the lead agency, ADF&G, will manage and implement the project.

1. Lake selection criteria.

Methodology for the lake selection criteria will be the same as the methods used for the feasibility sampling, pre-fertilization and fertilization phase outlined in the following:

2. Feasibility Sampling.

All methodology to sample and measure the following parameters will follow "Limnological Field and Laboratory Manual: Methods For Assessing Aquatic Production"

Physical parameters

- A. Water flow.
- B. Lake mapping for depth contours and volume estimates.
- C. Light penetration.
- D. Other factors such as temperature regimes and turbidity.

Chemical parameters

- A. Water sampling once per month during the ice-free period and evaluated per limnological field and laboratory guidelines. Parameters to be sampled include:

Alkalinity
Keljdahl nitrogen
Nitrate
Particulate nitrogen
Nitrite
Reactive phosphorus
Reactive silica
Total phosphorus

Metals
Ammonium
Particulate phosphorus
Dissolved oxygen
Dissolved solids
Specific conductance
pH

Biological parameters

- A. Primary production: phytoplankton sampling, should be done every four weeks during the ice-free period.

B. Secondary production: zooplankton sampling, should be done once per month. Zooplankton are to be identified, counted and wet and dry weights determined

C. Tertiary production: adult salmon production is to be enumerated.

- Enumeration of fry and rearing juveniles to be made by tow netting and/or acoustical methods.
- Smolt and adult enumeration would be made by appropriate means i.e.: weir and fyke net.
- Salmonid viral and bacterial diseases would be monitored.

D. Determination of the following factors will be made:

- Smolt and adult enumeration will include age-weight-length data.
- Beach spawning areas will be estimated.
- Stomach of juvenile salmon would be collected and identified to determine food preferences.
- Information necessary to determine fecundity and egg-fry, fry-juvenile, and juvenile-smolt survival is to be collected.

E. Other Determinations

- The entire fertilization project and design will be reviewed by the Alaska Department of Fish and Game, Limnology Section.
- A public awareness program conducted to inform interested people of the potential of the lake enrichment program.

Methods, Phase two (Lake Fertilization)

Results of the lake selection and pre-fertilization phase will determine the amount, type (ratio of Phosphorus to Nitrogen, P:N) the rate which the fertilizer will be applied and the area of the lake to be covered. Since only very limited limnological survey work has been done on Delight and Desire Lakes to date, exact methodologies for the fertilizer application cannot be developed until the phase one inventories and surveys have been completed. The Cook Inlet Seiners Association has worked in cooperation with ADF&G on the Leisure and Chenik Lake fertilization program for several years. Results from the Leisure Lake project and the euphotic volume (EV) model developed by Koenings and Burkett indicate methodologies and procedures could be developed for the Delight and Desire Lake fertilization project.

C. Cooperating Agencies, Contracts, and Other Agency Assistance

The Lower Cook Inlet Fisheries Development Association assumes that the lead agency with the specific expertise (ADF&G) will implement the project.

Currently, the only contracts anticipated with the private sector would be contractual services with local air taxi services.

Contractual services would be arranged with the Limnology Laboratory of ADF&G to analyze all limnology samples, i.e., water and plankton samples. In addition, fertilizer procurement would be arranged through bid contracts with private vendors.

SCHEDULE:

A. Measurable Project Tasks For FY/97 (October 1, 1996 - September 30, 1997)

Project tasks for FY/97 would complete a comprehensive chemical, physical and biological survey of Delight and Desire Lakes as part of phase one (lake selection and pre-fertilization study). The surveys would begin as soon as ice is off the lakes (early May). A smolt enumeration camp would be stationed at both lakes. Lake sampling would be conducted in conjunction with the smolt project and continue through October or as directed by ADF&G, Limnology staff.

The following schedule is anticipated beginning in the spring of 1997.

Start-up to April 15:..... Arrange logistics (camp, boats, sampling equipment and consult with land owners).
April 16 to July 1..... Establish smolt evaluation camp and conduct limnology surveys.
July 2 to October 1..... Conclude spring, summer, fall limnology surveys and evaluate smolt data.
April 1998..... Annual report on 1997 lake survey results.

B. Project Milestones and Endpoints

Start-up to October 1997..... Complete 1st year lake feasibility and pre-fertilization surveys.
October 97 to April 1998..... Complete data analysis of lake feasibility and pre-fertilization surveys.
April 1998 to October 1998..... Complete 2nd year lake feasibility and pre-fertilization surveys.
October 98 to April 1999..... Complete 2nd years survey data analysis and determine fertilizer application rates, amounts and formula.
June 1999 to Sept. 99..... Apply fertilizer and continue lake limnology surveys.
October 1999 to April 2000..... Analyze lake survey data and evaluate lake enrichment project.
June 2000 to Sept. 2000..... Continue with lake enrichment program
Sept. 2000 to April 2001..... Analyze 2nd year lake enrichment program.

C. Completion Date

PUBLICATIONS AND REPORTS

There are currently no plans to submit manuscripts in FY/97. The first year of this project consists primarily of monitoring and data gathering.

PROFESSIONAL CONFERENCES

There are no plans to attend or participate in professional conferences in Fy/97.

NORMAL AGENCY MANAGEMENT

The Department of Fish and Game is not ordinarily fiscally prepared to respond to events outside its control. However, we feel that the department must respond to events (such as the *Exxon Valdez* Oil Spill) that could threaten the health and existence of wild fish stocks such as the wild stock Sockeye Salmon of Delight and Desire Lakes. However, to adequately assess the current status of the salmon stocks at Delight and Desire and determine methods to rehabilitate those stocks, fiscal assistance is required from other sources. In Lower Cook Inlet, the Division of Commercial Fisheries (Development Section) has an excellent track record with respect to enhancing and rehabilitating sockeye salmon stocks. However, the projects were possible only with funding assistance from other sources such as the Cook Inlet Aquaculture Association, Bureau of Indian Affairs, Cook Inlet Seiners Association and economic grants from the City of Homer.

Any additional injury to the salmon stocks at Delight and Desire Lakes, directly related to the oil spill may not be evident, however, services lost to the commercial and sport fishery could persist if the salmon stocks continue to remain below the escapement levels set by ADF&G.

Recovery of the sockeye stocks at Delight and Desire Lakes would support the efforts already made by the *Exxon Valdez* Trustee Council to restore services and injuries to sockeye salmon throughout the range of the spill area.

The increased numbers of salmon in the East Nuka Subdistrict would facilitate management efforts for a sustained maximum yield as well as providing for increased harvests for both the sport and commercial fishery.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

As previously mentioned, the Development Section of ADF&G has been and is currently involved in cooperative projects similar to the proposed project. Research and historical data are available from these projects for use with the proposed project.

The Department of Fish and Game currently operates a lake fertilization program on Leisure Lake in cooperation with the Cook Inlet Aquaculture Association and the Cook Inlet Seiners Association. ADF&G has several pieces of sampling and field equipment (field camps, limnology survey equipment etc.) that can be used with the Delight and Desire Lakes project.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

Phase two of this project will actually apply fertilizer to one or both lakes. A proposed long term funding source has been proposed. It would include possibly increasing the revenue goal for one or more of the currently operating special harvest areas located in Lower Cook Inlet set up and operated by the Cook Inlet Aquaculture Association (Figure 5&6).

PROPOSED PRINCIPAL INVESTIGATOR

Nick Dudiak
Alaska Department of Fish and Game
3298 Douglas Street
Homer, Alaska 99630
907-235-8191
907-235-2448
NickD@fishgame.state.ak.us

PERSONNEL

Lower Cook Inlet Fisheries Development Association, Proposer:

Ken Castner.....Interim President

Darlene Hilderbrand.....Executive Secretary

Board Members

John Wise	Roy Cabana
Rob Nelson	Chris Moss
Ken Castner	Joe Brunner
Jessie Nelson	Glen Carroll
Glen Carroll	Drew Scalzi

Alaska Department of Fish and Game (Lead Agency)

Project leader: Nick C. Dudiak; Lower Cook Inlet Fisheries Resource Development Biologist.

Mr. Dudiak has been a fisheries biologist with the Alaska Department of Fish and Game for the last 19 years. He has been responsible for the commercial and sport fisheries rehabilitation and enhancement work in the Lower Cook Inlet area during those 18 years. In this capacity, he has been responsible for multi-disciplinary work involving the rehabilitation of depleted salmon stocks as well as enhancement activities that have created new and developing commercial and sport fisheries.

Project Manager: Mark Dickson, Fish and Wildlife Technician IV.

Mr. Dickson has been employed as a fish culturist and fish and game technician with the Alaska Department of Fish and Game for the past 19 seasons. He has considerable experience in fish cultural practices in the field and in the hatchery managing projects that restores and enhances sport and commercial fisheries in the Lower Cook Inlet area.

Gary Kyle, Regional Limnologist, Limnology Laboratory, Alaska Department of Fish and Game, Division of Commercial Fisheries, Management and Development, Soldotna.

Mr. Kyle has been employed with ADF&G since 1977. Since 1988, Mr. Kyle has served as the regional limnologist for the Southcentral Region comprising of the Interior, PWS, Cook Inlet and Alaska Peninsula. Mr. Kyle has presented 34 technical reports, 8 journal manuscripts, 24 formal

presentations and 6 magazine articles dealing with adult sockeye production, lake fertilization, lake stocking, and in-lake assessments of juvenile sockeye production.

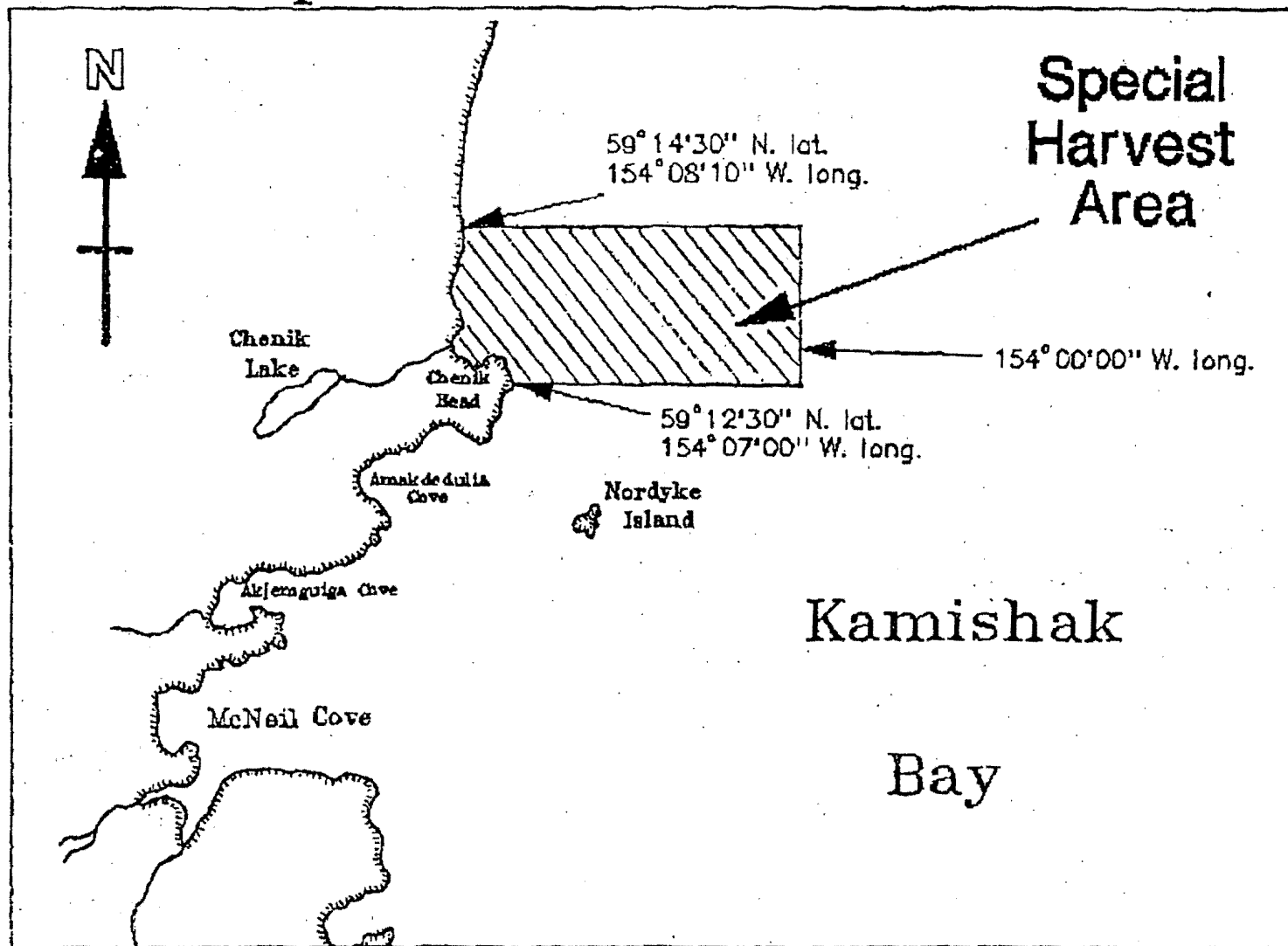
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- ADF&G. 1987 J.P. Koenings, Jim A. Edmunson, John M. Edmunson and Gary B. Kyle

**Limnology Field And Laboratory Manual: Methods For Assessing Aquatic
Production. Number 71. Alaska Department of Fish and Game. FRED
Division**

FIGURES

CHENIK Special Harvest Area



China Poot Bay Subdistrict

China Poot
Section
(241-09)

Neptune Bay
Section
(241-10)

Gull Island

Peterson
Bay

Peterson
Pt.

N

CLOSED TO SALMON
SEINING (DUNGENESS
CRAB SANCTUARY)

151°17'42" W. long.
59°33'58" N. lat.

151°14'22" W. long.
59°33'49" N. lat.

China Poot Bay

China Poot Special
Harvest Area

151°14'42" W. long.
59°33'31" N. lat.

151°17'54" W. long.
59°33'27" N. lat.

China Poot Creek

Sockeye Catch: Nuka Bay 1971-95

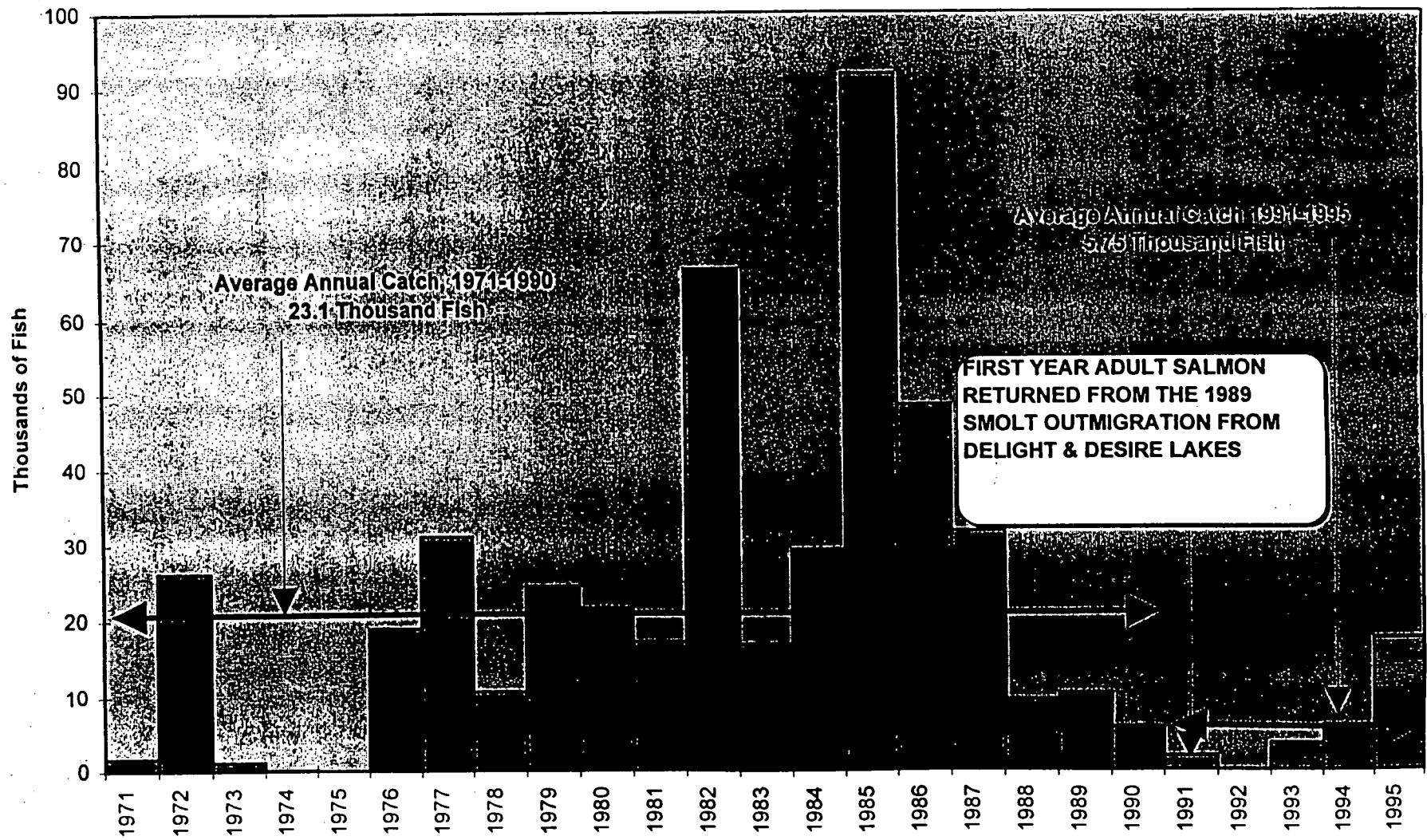


FIGURE 3.

Aialik Bay Sockeye Catch, 1979-1995

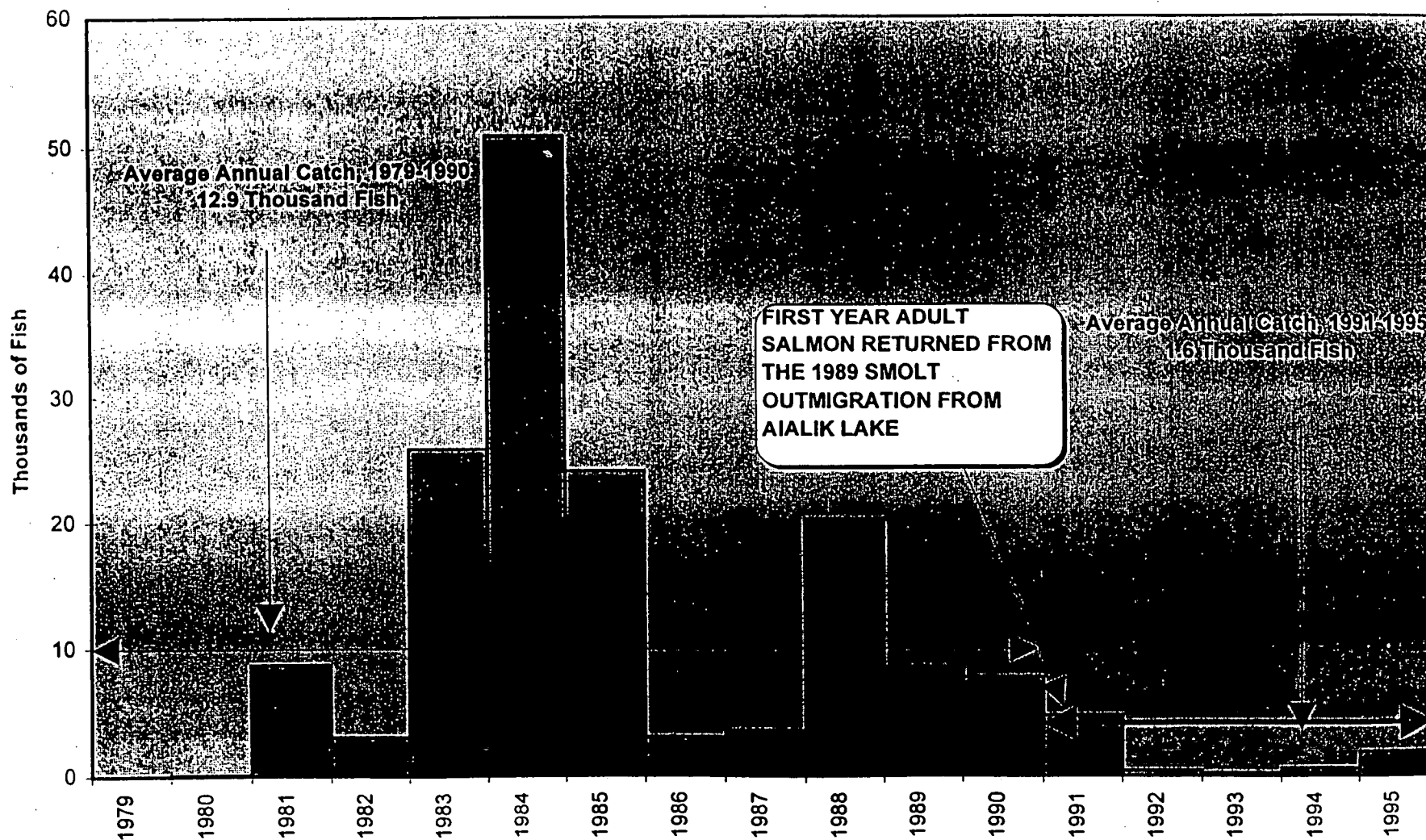


FIGURE 4.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES MANAGEMENT AND DEVELOPMENT

11.8.2 F
TONY KNOWLES, GOVERNOR

3298 Douglas Street
Homer, Alaska 99603
907-235-8191

January 17, 1997

Molly McCammon, Executive Director
Exxon Valdez Oil Spill Trustee Council
845 G Street Suite 401
Anchorage, Alaska 99501-3451

RECEIVED
JAN 22 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL

Dear Ms. McCammon,

Regarding your letter to Claudia Slater dated December 9, 1996, concerning the Delight and Desire Lakes proposal, please find our responses to the four questions that you requested. Thank you for the opportunity to respond to these concerns and please, do not hesitate to inquire if there are any other questions you may have.

Sincerely,

W.J. Hansen for:

Mark Dickson

RECEIVED
FEB 10 1997

Nick Dudiak

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Question #1: Preliminary estimate of implementation (fertilization) and monitoring costs over the life of the project.

There are several assumptions that must be made in order to calculate a rough estimate of the implementation and monitoring cost. **First**, the "life of the project" is assumed to mean the life after the pre-fertilization survey. We will assume a 2-year application period with a 3-year monitoring program, the third year monitoring will evaluate the second year application. The monitoring efforts will include 1) limnology sample surveys to evaluate limnological response to the fertilizer and 2) total return to each lake (aerial estimates of escapement, age-weight-length sampling of the commercial harvest and commercial harvest enumeration) will continue to evaluate project success. **Second**, given a estimated water residence time of 1.9 years for Delight and 0.7 years for Desire and spring Total Phosphorus level of 6, then 11 tons of fertilizer would be required for Delight and 10 tons for Desire Lake. The Total phosphorus level would need to be confirmed. In addition, we would only fertilize one lake, using the other for control. At this time it is anticipated that Delight Lake would be fertilized because of the longer continuing trend of poor escapement/return ratios.

Two year application period for Delight Lake:

Fertilizer Purchase; 11 tons (66 barrels) required @ \$425.00/ton F.O.B. Homer x 2 years
..... =
\$9,350

Transport to Delight Lake; @ 6 barrels/trip = 11 trips @ \$800.00/trip x 2 years..... = \$17,600

Transportation and personnel time to apply fertilizer; 1 trip per week @ \$240.00
x 10 weeks = \$2,400.00 and standby time at \$120.00 per week x 2 years..... = \$7,200

Logistics to transport skiff to Delight Lake; 2 hrs. helicopter @ \$750.00/hr..... = \$1,500

Hardware, fertilizer pump and sprayer assembly..... = \$750

Three year monitoring period

Limnology sample logistics; 5 sampling trips to collect required limnology samples
@ \$165.00/hr x 2 hrs. = \$1,650 x 3 years..... = \$4,950

Limnological analysis; 2 lakes, sampled 5 times each per year (first year's
limnological costs are included in the FY97 DPD budget proposal).
2 lakes, 2 sampling stations each with 2 sampling depths each sampled 5 times per season.
2 x 2 x 2 = 8 sampling depths each trip @ \$315.00 each depth = \$2,520.00 x 5 sampling
dates = \$12,600 x 2 years = \$25,200

TOTAL..... = \$66,550

Question # 2 Potential funding commitments for phase two (implementation and monitoring).

Potential funding sources are likely to be the responsibility of the potential user groups that have traditionally used the wild sockeye resources of the Delight and Desire Lake system. These would include commercial, sport and subsistence users and the organizations that they represent; the Lower Cook Inlet Fisheries Development Corporation (CIFDC) Lower Cook Inlet Seiners Association (CISA) and the Port Graham Corporation. Previous correspondence from the seiner associations (attached) submitted with the FY97 project proposal, demonstrates their willingness and commitment to investigate methods to fund phase two of the project. However, given the poor return of pink salmon to Tutka Hatchery in 1996 (revenue of which finances a large part of Lower Cook Inlet fishery enhancement projects) and the poor forecast for the 1997 sockeye salmon return to Lower Cook Inlet enhancement projects, budget constraints could likely defer actual contribution by the CIFDA and CISA.

Mr. Pat Norman, President of the Port Graham Corporation, was queried about their commitment to this project. He replied that although the Corporation does support this project, he was not authorized to make a financial commitment without a presentation to the Board. He did point out, however, that the Corporation is a member of the Cook Inlet Aquaculture Association and that the project had their support. In addition, during recent years, the Corporation had financially supported a similar (but more complicated project) in the English Bay lakes drainage, so there is a precedent of support by the Board.

Gary Kyle, Regional Limnologist for the Alaska Department of Fish and Game (ADF&G), has stated that the results of mandatory pre-fertilization surveys are valid for up to five years. The proposers and ADF&G feel that it is important to investigate the Delight and Desire Lake system to develop tools that could be used to improve conditions that may have been responsible for the decline in sockeye production in Nuka Bay. Given the 5-year period for which results are valid, the proposers are optimistic that funding mechanisms can be developed. The proposers and ADF&G believe that the wild sockeye stocks inhabiting Delight and Desire Lakes have substantial intrinsic value and the proposed pre-fertilization and limnology survey will provide an important first step in answering questions concerning diminished production from the Delight and Desire Lake systems.

Another very important side benefit of the proposed research for these two lake systems would allow biologists, through the comprehensive biological surveys, to evaluate the current biological escapement goals and the accuracy of the adult escapement enumeration methodology and provide justification for any adjustments. If any adjustments are needed and justified, they could very well play an important role in the rehabilitation of the native sockeye stocks.

Question # 3 Who would be the beneficiaries of the project?

When State of Alaska commercial harvest records were researched for historical use of the Delight and Desire sockeye stocks, there were no record of subsistence use. The record dates back to the early 1970's. However, several contacts by ADF&G Subsistence Division with the residents of Port Graham Village have confirmed that there has been a subsistence use of the sockeye salmon runs into

Delight and Desire Lakes both pre-historically and within this generation. (Interviews are presently in raw data format and are expected to be converted to a report format by approximately February 1, 1997.) Meanwhile, there are at least eight seine permit holders who fish commercially in that area. Some personal/ household use harvest does occur at that time.

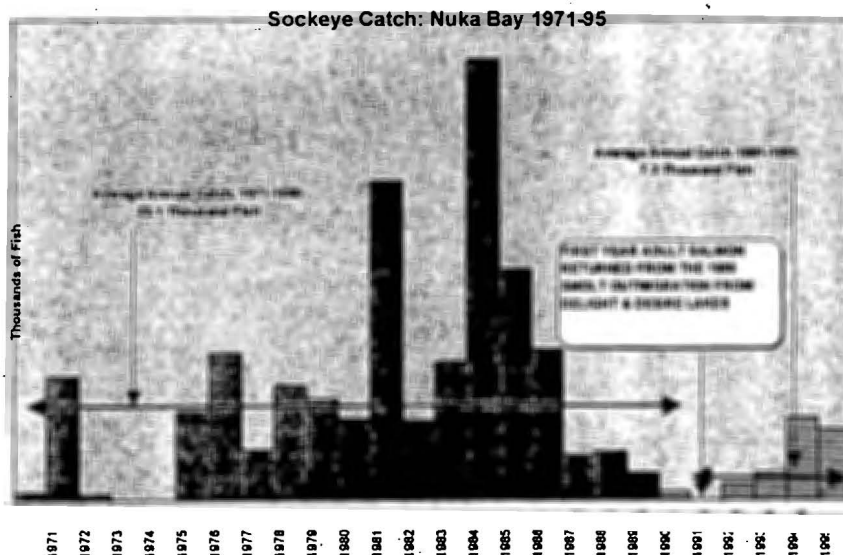
In addition to the subsistence and commercial use of the Delight and Desire sockeye resource by residents of Port Graham, the approximately 85 lower cook inlet salmon seine fishermen would benefit by increased stock abundance at Delight and Desire Lakes.

Question # 4 Catch and escapement history

As you may recall in the Detailed Project Description (DPD) we examined sockeye harvest from Nuka Bay, 1971-1995 and demonstrated an average lower catch of 7,300 fish for the period 1991-1995 as compared to 23,100 fish for the period 1971-1990 (Figure 1). We chose to examine the annual harvest in Nuka Bay because the proposal "Delight and Desire Lakes Restoration Project" is intended to mitigate losses or reduced services of commercial fishing. The valid concern was raised that this analysis did not account for changes in fishery effort and consequently may not accurately reflect declines in total return.

Accordingly, we have re-evaluated Delight and Desire stock trends based upon total returns. This analysis represents the total sockeye production of Nuka Bay. The period (1991-1996) represents returning adults that have out migrated Delight and Desire Lakes as smolts beginning in 1989. We are focusing our concerns on the lower production level that is evident during this recent period. The average total return for the period, 1975-1990 is 48,700 fish as compared to 25,750 fish production for the period 1991-1996 (Figure 2). The high variability of the data (standard deviation = 33.6, variance = 1,099) for the period 1975-1990 is difficult to explain. The standard deviation and variance is 12.9 and 167.3 respectively for the period 1991-1996. It is evident from Figure 2 that 1982 and 1985 are outliers for the period, 1975-1990. Factors that could have affected the production (for 1982 & 1985) are a higher than normal marine survival rate coupled with unusually productive spawning and rearing survival.

Figure 1. Total catch, Delight and Desire Lakes. 1971-1996.



Having no method to evaluate the unusually high production years of 1982 & 1985, a more conservative method for determining average total return for the period, 1975-1990, would be to remove the two prominent outlier years, 1982 & 1985, (Figure 3).

The average total production for the period 1975-1990, with the outliers deleted, is 38,315 fish while the total

return for the period 1991-1996 is 25,750 fish (Figure 3). This production level from 1991-1996 represents a 33% decrease from the 1975-1990 period. Please note that catch data are available from 1971 but escapement data is available from only 1975.

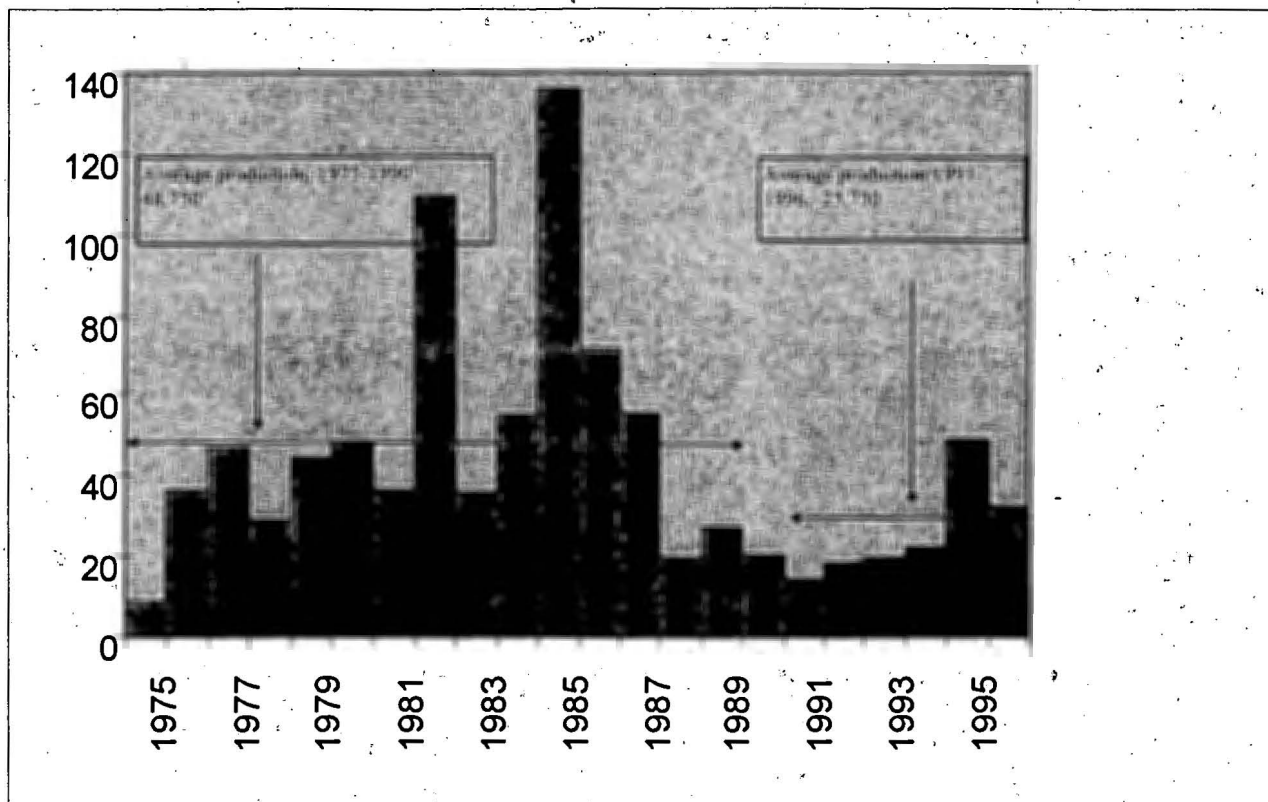


Figure 2. Total production, Delight and Desire Lakes, 1975-1996. Production data includes escapements and harvest from both lakes.

Although no direct link from the EVOS to the reduced production level can be made, this production period (1991-1996) represents the period that adult salmon first returned from the 1989 smolt outmigration. We feel that a 33% production decline is significant and that a comprehensive limnological profile of Delight and Desire Lakes would provide us with the data necessary to evaluate this reduced production level and may determine reasons for the variability in total returns.

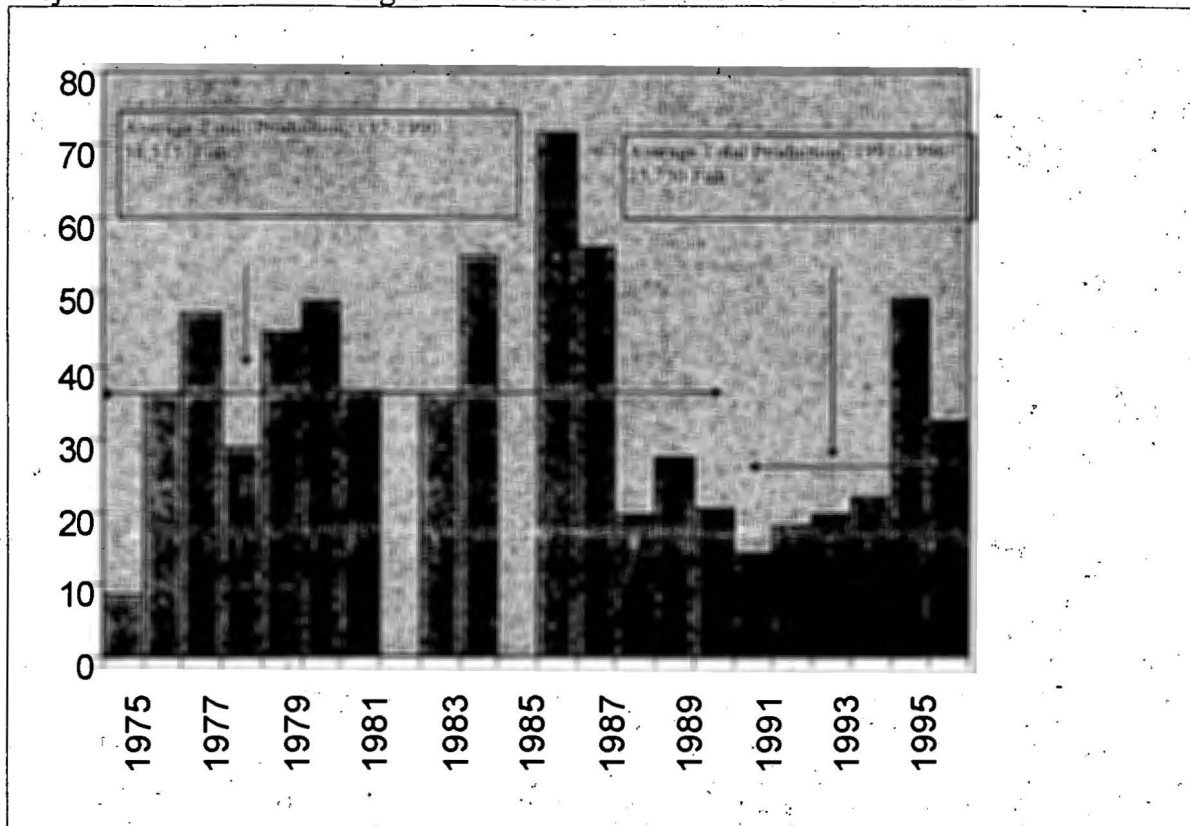


Figure 3. Total production, Delight and Desire Lakes, 1975-1996. Production data from 1982 & 1985 were deleted.

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11.8.2 F
Molly McCammon, Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street Suite 401
Anchorage, Alaska 99501-3451

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FEB 10 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Dear Ms McCammon,

In regards to project number 97254, as you know I fully support this project. At least it is a step in trying to restore, or enhance a resource. I think you should fund this project the full 3 years, without any talk of alternate funding sources. Just as the Skiff Float projects that are intended to help resources to recover, and that don't take that much money.

As compare to your so called Land acquisitions, seems like when it comes to that spending the sky is the limit, my feeling on this is that any projects we do turn in suffer because of your land buybacks spending. Our projects go through extensive budget cutting and land buybacks don't. Also I have never heard how you intend to protect or restore the natural resources on the lands you did buyback, just the fact that you buy them back does not restore the resources. In fact it further threatens them because don't the lands then become public property, public access. How are you going to keep tourist away, people are a threat to recovering resources.

The management and protection is in the hands of federal or state agencies what if anything have they done to inspire any confident in their management or protection of our natural resources. In my life time here in Port Graham I can name a number of resources that I can't enjoy today and a few more that are threatened Herring being one which your directed research was a joke, and a example of what I am talking about. Another example is the bark beetle infestation what are they doing to manage that. What are you doing to manage the infestation on lands that EVOS has bought back??

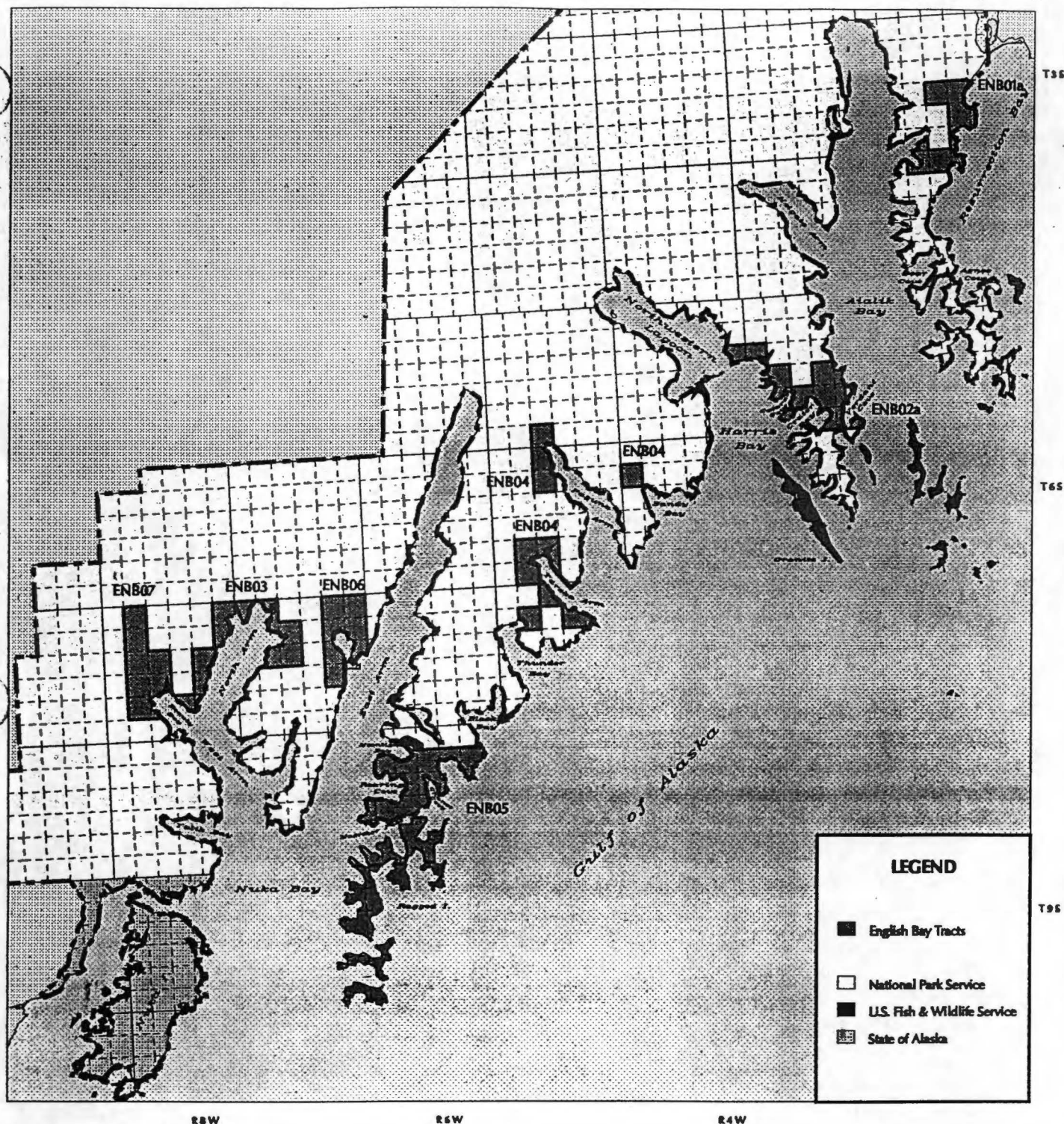
Community Facilitator
Walter Meganack Jr.

Walter Meganack Jr.

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FEB 10 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

11.8.2 E



**Habitat Protection Acquisition Parcels
Kenai Fjords National Park
English Bay Corporation Parcels**



National Park Service
Alaska System Support Office
Anchorage, Alaska

February 7, 1997

RECEIVED
FEB 10 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Scale 1:400,000
Alber's Equal Area Projection



Map Location

DRAFT 2/7/97

Attachment B
**Restoration Benefits Report
English Bay Corporation Lands**

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EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

Region - Kenai Peninsula

The lands to be acquired from the English Bay Corporation lie along the southeast coastline of the Kenai peninsula, primarily within Kenai Fjords National Park, with some lands located within the Alaska Maritime National Wildlife Refuge.

Description of the English Bay Lands

The English Bay parcels (designated as ENB 01A through ENB 07) are located along the deep water fjords of the Kenai Fjords National Park, the only fjord system in the United States. Combined, the parcels total 32,471 acres. The interest to be acquired is fee simple title to the surface estate.

The park is characterized by a complicated highly indented coastline, interspersed protected waters, and extremely scenic uplands. The fjords have tide-water glaciers, many of which have receded dramatically this century. Upland slopes are predominately steep, although there are also some relatively flat areas; soils are generally shallow. Coastal parts of the parcels are covered by a temperate rainforest dominated by Sitka spruce and western hemlock. Under story vegetation is typical of that found with this forest type. More inland parts of the parcels are covered with shrub and tundra vegetation types.

These coastal uplands and the adjacent marine waters provide habitat for a great diversity and abundance of marine life including various species of marine mammals, sea birds and fish. These waters are often occupied by harbor seals, sea otters, Northern sea lions, porpoises and Minke, Humpback, Orca and Gray whales. Harbor seals, sea otters and sea lions are known to haul out at various areas on the subject lands.

Numerous species of marine and other birds, including harlequin ducks, Kittlitz's and marbled murrelets, pigeon guillemots, black oystercatchers, pelagic cormorants and bald eagles injured by the *Exxon Valdez* oil spill, are found throughout the area and use park uplands. Several species of fish that were injured by the oil spill use these waters, including pink salmon, red salmon, Dolly Varden, Pacific herring, and Cutthroat trout. Upland areas also support black bear, moose, mountain goat, river otter, wolverine, mink, marten, coyote, snowshoe hare, and porcupine.

The English Bay lands package as a whole provides valuable habitat for nearly all of the injured resources and services harmed by the oil spill with some of the tracts having especially high values. Six of the seven parcels were ranked as having high value for wilderness. Five of the seven parcels were ranked as having high value for marbled murrelets. Six of the parcels were directly oiled by the oil spill, including heavy oiling of an archeological site. Some of the most important restoration values identified on these lands are further described below.

The ENB 06/James Bay parcel, located on the west side of McCarty Fiord in Nuka Bay contains a protected tidally-influenced lagoon that is bordered by sandy beaches and both forested and marshy lowlands. This biologically rich parcel has six short clear water streams that feed into the lagoon and is especially valuable for harlequin ducks (feeding, loafing and documented use by young and probable breeding); intertidal-subtidal resources (large mussel and clam beds, kelp, eelgrass and sheltered rocky shore); marbled murrelets (feeding concentrations, probable nesting); pigeon guillemots (feeding concentrations, probable nesting); black oystercatchers (nesting, feeding and loafing); river otters (feeding and probable denning, known latrine sites and high use area); sea otters (feeding and pupping area); and bald eagles (six documented nest sites and feeding area for adult and immature eagles). This lagoon system also has regionally significant value for pink salmon, helping to support the commercial fishing service. The protected lagoon on this parcel also affords important sea plane access and is frequently used as a put-in and take-out location for sea kayakers and other recreationists.

The ENB 02/Harris Peninsula parcel, extending along the eastern side of Harris Bay and a portion of the western coast of Aialik Bay, has especially high value for marbled murrelets (feeding and probable nesting with high detection rates); river otters (feeding, latrine sites and probable denning); and archeological resources (a historic Russian/Native trade location with four documented cultural sites). This parcel also supports feeding concentrations of pigeon guillemots and provides probable nesting habitat as well. The parcel has high value for wilderness and recreation.

The ENB 05/McArthur Pass parcel, including the outermost portion of the peninsula that defines the eastern side of McCarty Fiord and a part of Ragged Island, was heavily oiled and has high value for archeological resources (village location, six documented cultural sites); marbled murrelets (feeding, probable nesting) and also contains a haulout for the threatened Northern sea lion. This parcel is known to be used by river otters.

Additionally, the English Bay lands and the adjacent coastal waters provide habitat for common loons, cormorants and Kittlitz's murrelets, species that have been recognized as injured since the *Restoration Plan* was adopted in 1994, but not expressly used in the published large parcel habitat evaluation process.

The English Bay lands and associated marine waters also support high value tourism

and recreation services that sustain the City of Seward's growing recreation and tourism economy. Both large commercially-operated and small privately-owned boats ply the fjords in increasing numbers. The area is well known by sport fishermen who seek out salmon and halibut. Kayakers, campers, photographers and birders from around the world have discovered the park. The four public use cabins built by the National Park Service on the coast are heavily booked throughout each summer. Numerous businesses based in Seward have grown steadily since the park was created due to the enormous public interest in the wildlife values of this area. These recreation and tourism service companies continue to add to their capacity in response to growing public interest in the Park, its magnificent landscape, and its wildlife. There were 110 large cruise ship dockings in Seward during 1996. Half the park's 1995 commercial use licenses were for flight-seeing businesses providing tours of the park lands.

Purchase of the English Bay lands will result in habitat protection for not only the lands acquired, but for a much larger area. The lands to be acquired are within the designated boundaries of Kenai Fjords National Park, an area comprised of 669,000 acres. As such, adding these lands back into park status will ensure that the thousands of acres of protected habitat in the park are not fragmented by various developments or other activities. Both the lands acquired and the lands in the park will provide protection for injured natural and cultural resources and services injured by the oil spill.

Should the English Bay lands not be acquired, private development would fracture habitat into smaller blocks and protection for injured resources and services would be compromised. In future years some forested areas of the park could be logged. Even small logging operations could severely impair the biological, scenic, wilderness and recreational qualities of the otherwise undisturbed area.

The lands acquired would be managed by the National Park Service pursuant to the authorities under the National Park Service's Organic Act, 16 USC 1, and the Alaska National Interest Lands Conservation Act (ANILCA), 16 USC 3101 consistent with the Trustee Council's mission to restore injured resources and services. Cultural sites of particular importance to the Native community will be protected in a manner consistent with state and federal laws.

Exxon Valdez Oil Spill Trustee Council

645 G Street, Suite 401, Anchorage, AK 99501-3451 907/278-8012 fax: 907/276-7178



Habitat Protection Program: Small Parcels Status Report

February 7, 1997

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

One of the ways the Trustee Council protects habitat for resources and services injured by the *Exxon Valdez* oil spill is by buying land that has habitat value. The Council has already protected habitat on 361,000 acres of land in large tracts. In recognition of the unique habitat qualities and strategic value of smaller tracts of land (less than 1,000 acres), the Council initiated the Small Parcel Program in 1994.

In response to a public solicitation, 303 small parcels have been nominated. Council staff evaluate, score, and rank the parcels, taking into account the resource value of the parcel, adverse impacts from human activity, and potential benefits to management of public lands. The nomination period is open-ended. The Restoration Office continues to receive and evaluate nominations.

The Council has expressed interest in acquiring 52 of the parcels that have been nominated, along with a package of lands owned by the Kenai Natives Association and key waterfront parcels that were forfeited to Kodiak Island Borough for tax delinquency. The Council has authorized offers to purchase 37 small parcels at appraised fair market value, and contributions of \$4 million to the Kenai Natives Association Package and up to \$1 million for the Kodiak Island Borough Tax Parcels.

Table 1 summarizes the status of each of the offers. Twenty-two small parcels (about 2,700 acres) have been acquired for \$8.6 million. Owners of eight additional parcels (about 600 acres) have accepted offers for a total of \$3.2 million. Landowners are considering offers on five parcels, negotiations continue on the Kenai Natives Association Package, and the Kodiak Island Borough Tax Parcels are being appraised. The owners of two parcels have rejected offers to purchase their parcels at appraised fair market value.

The Council is also considering acquisition of the 15 parcels listed in **Table 2**, but has not yet authorized offers to purchase these parcels. A recently nominated parcel, KAP 1058 (Long Island), received a high score in the habitat evaluation and is therefore being considered for acquisition. **Table 3** is a list of 16 additional parcels that have been nominated in recent months.

Federal Trustees

U.S. Department of Interior
U.S. Department of Agriculture
National Oceanic and Atmospheric Administration

State Trustees

Alaska Department of Fish and Game
Alaska Department of Environmental Conservation
Alaska Department of Law

Table 1. Status of Small Parcel Acquisitions and Offers
February 7, 1997

Parcel ID	Description	Acres	Value	Status
Acquisitions Complete				
PWS 17, 17A-D	Ellamar Subdivision	33.4	\$655,500	
PWS 52	Hayward Parcel	9.5	\$150,000	
KEN 10	Kobylarz Subdivision	20.0	\$320,000	
KEN 29	Tulin Parcel	220.0	\$1,200,000	
KEN 34	Cone Parcel	100.0	\$600,000	
KEN 54	Salamatof Parcel	1,377.0	\$2,540,000	
KEN 1006	Girves Parcel	110.0	\$1,835,000	
KEN 1014	Grouse Lake	64.0	\$211,000	
KAP 98	Pestrikoff Parcel (Sitkalidak Strait)	80.0	\$128,000	
KAP 99	Shugak Parcel (Kiliuda Bay)	160.0	\$155,200	
KAP 101	Haakanson Parcel (Sitkalidak Strait)	80.0	\$52,000	
KAP 103	Kahutak Parcel (Sitkalidak Strait)	40.0	\$66,000	
KAP 105/142	Three Saints Bay	88.0	\$168,000	
KAP 115	Johnson Parcel (Uyak Bay)	65.0	\$110,500	
KAP 131	Matfay Parcel (Kiliuda Bay)	40.0	\$68,000	
KAP 132	Peterson Parcel (Sitkalidak Strait)	160.0	\$256,000	
KAP 135	Capjohn Parcel (Kiliuda Bay)	70.0	\$73,500	
Subtotal:		2,716.9	\$8,588,700	
Offers Accepted				
PWS 11	Horseshoe Bay	315.0	\$475,000	
KEN 19	Coal Creek Moorage	53.0	\$260,000	
KEN 148	River Ranch	146.0	\$1,650,000	
KEN 1005	Ninilchik	16.0	\$50,000	
KEN 1009	Cooper Parcel	30.0	\$48,000	
KEN 1015	Lowell Point	19.4	\$531,000	
KEN 1049	Mansholt Parcel (Kenai River)	1.6	\$55,000	
KAP 114	Johnson Parcel (Uyak Bay)	55.0	\$154,000	
Subtotal:		636.0	\$3,223,000	
Offers Under Review				
KEN 55	Overlook Park	97.0	\$244,000	Appraisal is being updated.
KEN 1034	Patson Parcel	76.3	\$375,000	Discussions continue.
KAP 220	Mouth of Ayakulik R.	56.0	\$213,000	Willing to sell a larger package.
KAP 226	Karluk River Lagoon	21.5	\$146,000	Willing to sell a larger package.
KAP 1055	Abston Parcel (Uyak Bay)	160.0	\$281,300	Discussions continue.
<i>Kenai Natives Association Package (Stephanka/Moose R.)</i>		3,254.0	\$4,000,000	Legislation approved and signed.
<i>Kodiak Island Borough Tax Parcels</i>			\$1,000,000	Appraisals underway.
Subtotal:		3,664.8	\$6,259,300	
Offers Rejected				
KEN 12	Baycrest	90.0	\$450,000	Counteroffer of \$720,000.
KEN 1001	Deep Creek	91.0	\$672,000	Not ready to sell at this time.
Subtotal:		181.0	\$1,122,000	

Table 2. Parcels Under Consideration*

February 7, 1997

Parcel ID	Description	Acres	Value	Comments
Appraisal Approved				
KEN 1038	Roberts Parcel	5.9	\$1,304,000	
Subtotal:		5.9	\$1,304,000	
Appraisal Under Review				
PWS 05	Valdez Duck Flats (USS 349 & 448)	42.0		USS 448 to be reappraised; USS 349 appraisal to be updated.
PWS 06	Valdez Duck Flats (USS 447)	24.7		Appraisal will be updated.
PWS 1010	Jack Bay	942.0		Third appraisal under review.
KEN 1039	Oberts Parcel (Big Eddy)	31.7		
KEN 1040	Oberts Parcel (Honeymoon Cove)	4.2		
KEN 1041	Oberts Parcel (Peterkin Hmstd.)	30.0		
KAP 91	Adonga Parcel (Sitkalidak Strait)	137.0		Awaiting probate.
KAP 118	Cusack Parcel (Sturgeon Lagoon)	160.0		
KEN 1051	Salamatof Native Assn. (Kenai NWR)	16.0		
KEN 1052	Salamatof Native Assn. (Kenai NWR)	10.0		
Subtotal:		1,397.6		
Appraisal Authorized				
KAP 145	Termination Point	1,028.0		Appraisal authorized, but not yet underway.
Subtotal:		1,028.0		
Recently Scored Parcels				
KAP 1058	Leisnoi Parcel (Long Island)	1,462.0		Recently ranked high.
Subtotal:		1,462.0		
Owner Unwilling to Sell				
KAP 22	The Triplets	65.0	\$6,500	Owner unwilling to sell at appraised fair market value.
KAP 150	Karluk	5.0	\$105,000	Owner unwilling to sell at appraised fair market value.
Subtotal:		70.0	\$111,500	

* Pert Island (KEN 149), a 156-acre parcel south of the Kenai Peninsula, is no longer under consideration because sponsorship has been withdrawn.

* Fleming Spit (PWS 1027), a 5.4-acre parcel in Cordova, is no longer under consideration because the Alaska Division of Parks has executed an agreement to purchase this parcel with State criminal settlement funds.

Table 3. Small Parcel Nominations
July 1995 to February 1997*

Parcel ID	Description	Acres	Sponsor	Rank
PWS 1045	Dennis Parcel (Valdez Duck Flats)	4.3	Sponsorship withdrawn	Does not meet threshold criteria.
PWS 1056	Blondeau Parcel (Valdez)	100.0	ADNR	Low
KEN 1030	Anchor River	127.8	No sponsor	Does not meet threshold criteria.
KEN 1032	Matson Parcel (Ninilchik River)	7.4	ADFG	Low
KEN 1035	Mullen Parcel (Kenai River)	8.5	ADNR/ADFG	Low
KEN 1036	Weilbacher Parcel (Kenai River)	28.7	ADNR/ADFG	Low
KEN 1037	Coyle Parcel (Kenai City Boat Dock)	26.0	No sponsor	Does not meet threshold criteria.
KEN 1042	College Estates (Kenai River)	56.0	ADNR/ADFG	Low
KEN 1043	College Estates (Kenai River)	77.9	ADNR/ADFG	Low
KEN 1044	Breeden Parcel (Kenai River Flats)	25.0	ADNR/ADFG	Low
KEN 1046	Pollard Parcel (Kasilof River)	155.0	ADFG	Low
KEN 1047	Calvin Parcel (Kasilof River)	76.8	ADFG	Does not meet threshold criteria.
KEN 1057	Lowe Parcel (Kenai River)	22.0	ADNR	Low
KEN 1059	Grubba Parcel (Kenai River)	26.7	ADNR/ADFG	Low
KAP 1050	Christiansen Parcel (Sitkalidak Strait)	159.0	USFWS	Low
KAP 1054	Christiansen Parcel (Kiliuda Bay)	160.0	USFWS	Low
Total:		1,061.1		

* These parcels have been nominated since publication of *Comprehensive Habitat Protection Process: Small Parcel Evaluation & Ranking, Volume III*, Supplement July 15, 1995.



Conserving Land
for People

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EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

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EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL

Ms. Molly McCammon
Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street, Suite 401
Anchorage, AK 99501-3451

Dear Molly:

I enjoyed meeting with you and your staff two weeks ago to discuss the Trust for Public Land's (TPL) efforts with the City of Homer and Kachemak Heritage Land Trust (KHLT) to protect undeveloped property on the Homer Spit and Beluga Slough. I appreciate your continued interest in this project and am pleased to present you with the following status report for consideration of funding under the Small Parcel Habitat Protection Program.

As you know, TPL was asked by the City and KHLT to join in the protection of critical habitat lands in Homer that are threatened by commercial and or residential development by using its skills in real estate and finance to secure property until funding can be identified to purchase these properties. Towards that end, TPL is negotiating exclusive options with willing sellers and has succeeded in securing several properties for a limited period of time. The enclosed map will give you a good sense of the properties that TPL is currently focused on. By the mid-February meeting of the Council, TPL will have or expects to have 73 acres on the Spit under option (includes all properties in yellow and several of those in orange). In the Beluga Slough, TPL expects to have at least 40 acres under option. Both the Spit and Slough properties (representing 8 separate ownerships) are adjacent to existing publicly-owned conservation land owned and managed by the City of Homer, State of Alaska or the United States Fish and Wildlife Service. Without funding to purchase these properties, it is likely that they will be lost to similar patterns of development that have recently affected large areas of the Spit and now also threaten the perimeters of the Beluga Slough.

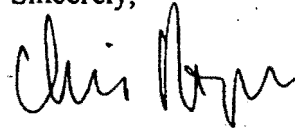
The acquisition of these additional properties will not only enhance the ecological integrity of the existing conservation land, but will help further the goals of the EVOS program by protecting the habitat and species most affected by the spill. Both the Homer Spit and the Beluga Slough have been recognized by both public agencies and conservation organizations for their

Ms. Molly McCammon
February 3, 1997
Page 2

habitat values. Both are within or immediately adjacent to State-designated Critical Habitat Areas and host a diverse number of species, including: clams, mussels and other mollusks, migratory and resident shore and water birds, bald eagles, silver and other salmon species, and even large mammals such as moose. It is on this basis that TPL, together with the City and the KHLT would submit properties secured under option to the Council for nomination and funding under the Small Parcel Program.

Please feel free to contact me if you have any questions concerning the enclosed map or the status of TPL's negotiations with various property owners. Again, thank you for your interest in this important project.

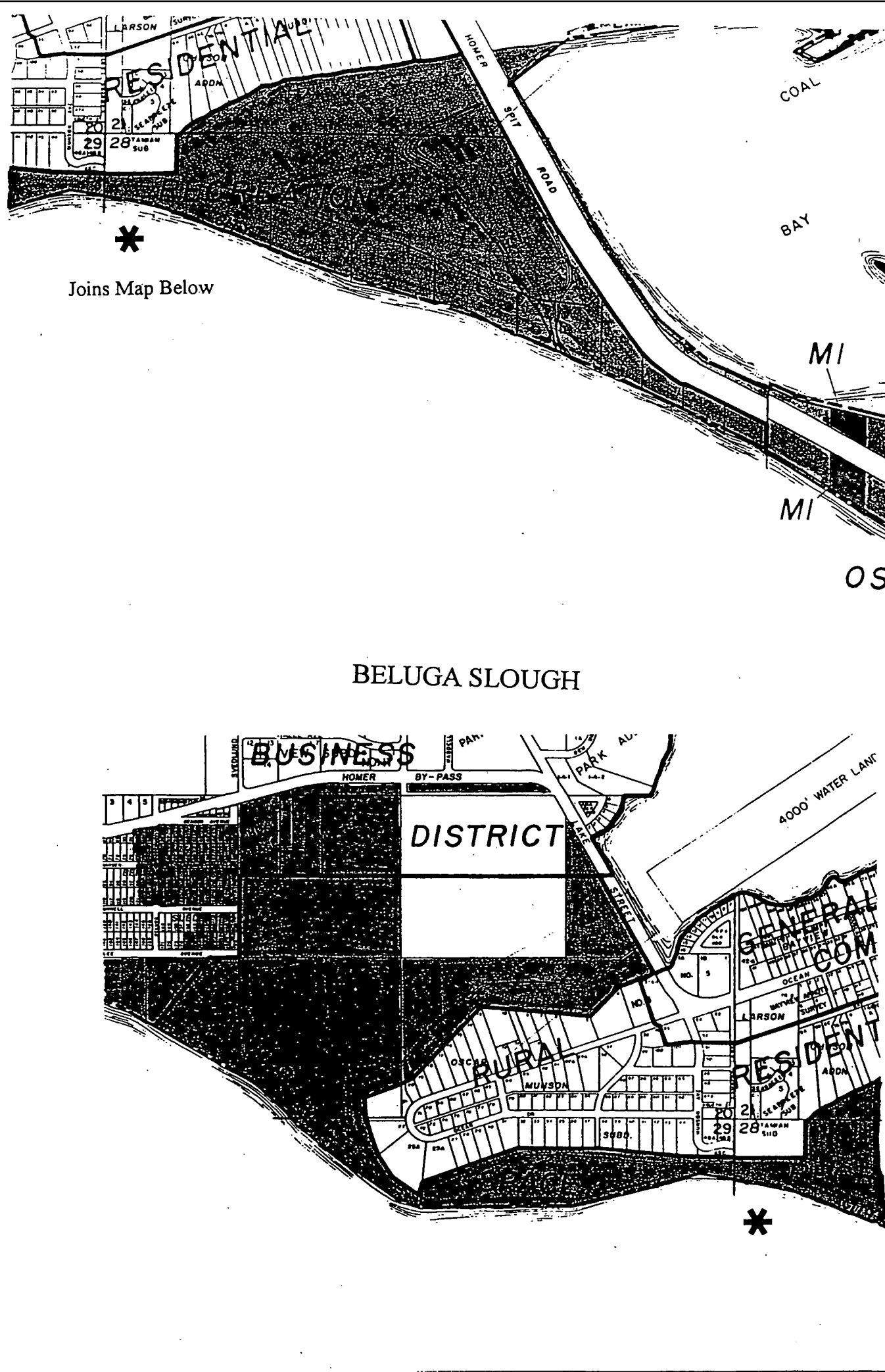
Sincerely,

A handwritten signature in cursive script, appearing to read "Chris Rogers".

Chris Rogers
Project Manager

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ADMINISTRATIVE RECORD



HOMER SPIT/BELUGA SLOUGH Land Protection Program

- - Public Land
(City of Homer, State of AK, U.S. Fish & Wildlife Service)
- - Private Property Available for Acquisition
(Under option or verbal agreement reached)
- - Private Property Identified for Acquisition
- - Developed Private Property
(currently not under consideration for acquisition)

Note: This map was prepared by The Trust for Public Land
and should be used for illustrative purposes only (2/3/97)

11.8.2C

Exxon Valdez Oil Spill Trustee Council

645 G Street, Suite 401, Anchorage, AK 99501-3451 907/278-8012 fax: 907/276-7178

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Habitat Protection Program: Large Parcels Status Report February 7, 1997

EXXON VALDEZ OIL SPILL
ADMINISTRATIVE RECORD

The *Exxon Valdez* Trustee Council funds the acquisition of land to protect the habitat of injured resources and services. The goals of habitat protection are to prevent additional injury to resources and services while recovery is taking place and to provide a long-term safety net for these resources.

In 1992, the Restoration Office evaluated 16 large parcels (over 1,000 acres) that were imminently threatened by development. In March 1993, the Restoration Office contacted 90 owners of large parcels in the spill area. Thirty-two landowners expressed interest in having their land considered for acquisition and 850,000 acres of land were subsequently evaluated.

As of February 1997, the Council has spent \$161.4 million to protect 361,000 acres of land, with parcels ranging in size from 2,000 to 119,000 acres. Seven large parcels have been purchased, including inholdings in Kachemak Bay State Park, land adjacent to Seal Bay/Tonki Cape on Afognak Island, commercial timber rights on land along Orca Narrows, a 27,000-acre parcel on Shuyak Island, and lands formerly owned by Akhiok-Kaguyak, Inc., Old Harbor Native Corporation, and Koniag, Inc.

On February 5, 1997, the federal government and Chenega Corporation signed a purchase agreement for 59,520 acres of land in Prince William Sound. The transaction is expected to close in Spring 1997.

In August 1996, the Council authorized funds for an offer to acquire interests in 68,888 acres owned by Tatitlek Corporation. The offer has been accepted, but acquisition of this parcel depends on a vote of the shareholders of the corporation.

Negotiations continue with five landowners to protect additional habitat. The landowners are Afognak Joint Venture, English Bay Corporation, Eyak Corporation, Koniag, Inc., and Port Graham Corporation.

Table 1 summarizes the status of land acquisitions as of February 1997 — whether acquisitions are complete, offers are pending or negotiations continue. Table 1 also indicates the acreage of each parcel and, if known, its purchase price, contributions from the joint trust fund, and contributions from other sources.

Federal Trustees

U.S. Department of Interior
U.S. Department of Agriculture
National Oceanic and Atmospheric Administration

State Trustees

Alaska Department of Fish and Game
Alaska Department of Environmental Conservation
Alaska Department of Law

Table 1. Status of Large Parcel Acquisitions
February 7, 1997

Parcel Description	Acreage	Total Price (Incl. Interest)	Trust Fund	Other Sources¹
Acquisitions Complete				
Kachemak Bay State Park Inholdings	23,800	\$22,000,000	\$7,500,000	\$14,500,000
Seal Bay / Tonki Cape	41,549	\$39,549,333	\$39,549,333	\$0
Orca Narrows (timber rights)	2,052	\$3,650,000	\$3,650,000	\$0
Akhiok - Kaguyak, Inc.	118,674	\$46,000,000	\$36,000,000	\$10,000,000
Old Harbor ²	31,609	\$14,500,000	\$11,250,000	\$3,250,000
Koniag (fee title)	59,689	\$26,500,000	\$19,500,000	\$7,000,000
Koniag (limited term easement)	57,082	\$2,000,000	\$2,000,000	\$0
Shuyak Island	26,665	\$42,000,000	\$42,000,000	\$0
Subtotal:	361,120	\$196,199,333	\$161,449,333	\$34,750,000
Purchase Agreement Signed				
Chenega	59,520	\$34,000,000	\$24,000,000	\$10,000,000
Subtotal:	59,520	\$34,000,000	\$24,000,000	\$10,000,000
Offers Accepted				
Tatitlek ³	68,888	\$35,010,800	\$25,010,800	\$10,000,000
Subtotal:	68,888	\$35,010,800	\$25,010,800	\$10,000,000
TOTAL:	430,008	\$231,210,133	\$186,460,133	\$44,750,000
Negotiations Continuing⁴				
Afognak Joint Venture	112,827			
English Bay	32,470			
Eyak	72,000			
Koniag (fee title) ⁵				
Port Graham	46,170			
Subtotal:	263,467			
Total Acreage to be Protected:	693,475			

¹ For the acquisition of Kachemak Bay State Park inholdings, funding from other sources consists of a State of Alaska contribution of \$7 million from the Exxon plea agreement and \$7.5 million from the civil settlement with the Alyeska Pipeline Service Company. For all other parcels, funding from other sources consists of a Federal contribution from the Exxon plea agreement.

² As part of the protection package, the Old Harbor Native Corporation agreed to protect an additional 65,000 acres of land on Sitkalidak Island as a private wildlife refuge.

³ The price offered includes \$2,010,800 in lieu of interest over a two-year pay period.

⁴ Acreage is estimated and may change as negotiations continue.

⁵ Negotiations with Koniag concern fee title to the 57,082 acres that are currently protected under a limited conservation easement.

Acquisitions Complete

Kachemak Bay. In August 1993, the state acquired surface title to 23,800 acres of private inholdings within Kachemak Bay State Park on the Kenai Peninsula. This acquisition protects a highly productive estuary, several miles of anadromous fish streams and intertidal shoreline and upland habitat for bald eagles, marbled murrelets, river otters, and harlequin ducks. The Council contributed \$7.5 million to this purchase and the State of Alaska contributed \$7 million from the Exxon plea agreement and \$7.5 million from the civil settlement with Alyeska Pipeline Service Company.

Seal Bay and Tonki Cape (Afognak Island). In November 1993, the state purchased surface title to 41,549 acres on northern Afognak Island. This mature spruce forest is adjacent to highly productive marine waters, includes anadromous fish streams, and provides excellent habitat for bald eagles and marbled murrelet nesting. The Council authorized \$39.5 million (including interest) for this purchase. In 1994, the Alaska State Legislature designated these lands as the Afognak Island State Park.

Orca Narrows Subparcel. In January 1995, the federal government purchased from the Eyak Corporation commercial timber rights on 2,052 acres of land in Orca Narrows. This parcel is near Cordova in Prince William Sound and contains anadromous fish streams, active bald eagle nests and favorable habitat for marbled murrelet nesting. The Council authorized \$3.65 million for this acquisition.

Akhiok-Kaguyak. In May 1995, the federal government agreed to purchase from Akhiok-Kaguyak, Inc., surface title to 76,211 acres of land and conservation easements on 42,463 acres, for a total of 118,674 acres. These lands are within the Kodiak National Wildlife Refuge. The Council contributed \$36 million to this acquisition and the federal government contributed \$10 million from the federal restitution fund, for a total purchase price of \$46 million.

Old Harbor. Also in 1995, the federal government purchased from the Old Harbor Native Corporation surface title to 28,609 acres of land and the corporation donated a conservation easement on 3,000 acres. These lands are within the Kodiak National Wildlife Refuge. In addition, the Old Harbor Native Corporation agreed to preserve 65,000 acres of land on nearby Sitkalidak Island as a private wildlife refuge. The Council contributed \$11.25 million to this acquisition and the federal government contributed \$3.25 million from the federal restitution fund, for a total purchase price of \$14.5 million.

Koniag. In November 1995, the federal government purchased from Koniag, Inc., surface title to 59,689 acres of prime habitat for bear, salmon, bald eagles, and other

species in the Kodiak National Wildlife Refuge. This agreement protected an additional 57,082 acres under a nondevelopment easement through the year 2001. The nondevelopment easement includes land along the Karluk and Sturgeon Rivers. The Council contributed \$21.5 million to this acquisition and the federal government contributed \$7 million from the federal restitution fund, for a total purchase price of \$28.5 million.

Shuyak Island. In December 1995, the Council approved \$42 million (including interest) to purchase from the Kodiak Island Borough surface title to 26,665 acres of prime habitat on Shuyak Island, at the northern tip of the Kodiak archipelago. The Kodiak Island Borough agreed to commit \$6 million from the land sale to expansion of Kodiak's Fishery Industrial Technology Center.

As part of the purchase agreement for lands on Shuyak Island, the Council authorized up to an additional \$1 million to purchase small parcels within the Kodiak National Wildlife Refuge that have been acquired by the Kodiak Island Borough as a result of the property owners' failure to pay borough taxes. These parcels are about 10 acres in size and occupy key waterfront locations along Uyak Bay on Kodiak Island. They are embedded in two highly ranked large parcels approved as part of the Koniag purchase agreement.

Purchase Agreement Signed

Chenega. On February 5, 1997, the federal government and the Chenega Corporation executed an agreement to purchase surface title to 37,236 acres of land and conservation easements on an additional 22,284 acres. Public access will be allowed on all the land in the conservation easement except 3,330 acres on the southern portion of Chenega Island in the vicinity of the original Chenega village site. Two parcels to be acquired in fee simple, the Eshamy Bay and Jackpot Bay parcels, are among the highest ranked parcels in the oil spill area. The Council contributed \$24 million to this acquisition and the federal government contributed an additional \$10 million from the federal restitution fund, for a total purchase price of \$34 million. The acquisition of this parcel is expected to close in Spring 1997.

Offers Accepted

Tatitlek. In late 1996, the Council authorized \$23 million (plus \$2,010,800 in lieu of interest over a two-year pay period) for an agreement to purchase 68,888 acres from Tatitlek Corporation. An additional \$10 million would come from the federal restitution fund, for a total of \$35 million. The agreement includes acquisition of surface title to 31,490 acres of land and conservation easements on 37,398 acres. Two of the parcels in which interests will be acquired, Bligh Island and Two Moon Bay, were respectively the third and fourth highest ranked parcels in Prince William Sound. The offer includes

timber-only conservation easements on the north shore of Port Fidalgo and on land at Sunny Bay.

Negotiations Continuing

Afognak Joint Venture. In December 1994, the Council authorized up to \$70 million for an offer to purchase from Afognak Joint Venture surface title to 48,728 acres on northern Afognak Island. The Council also authorized further negotiations about the acquisition of an additional 64,099 acres, for a total acquisition of 112,827 acres. The property consists of seven dispersed parcels, five of which are adjacent to or near the previously acquired Seal Bay parcel, one is adjacent to Shuyak Strait, and one is in the western part of Afognak Island. The timber appraisal is under review.

English Bay and Port Graham. The U.S. Department of the Interior, on behalf of the Council, is holding discussions with English Bay Corporation and Port Graham Corporation about the purchase of 78,640 acres, much of which is within Kenai Fjords National Park.

Eyak. Discussions continue with Eyak Corporation on how to protect about 72,000 acres of corporation lands, particularly Port Gravina, Sheep Bay, and Windy Bay. These lands include the "Core Parcels" and Orca Narrows.

Koniag. The Council is interested in acquiring fee interest in the 57,082 acres covered by the limited term nondevelopment easement acquired in November 1995, and has agreed to maintain unobligated funds totaling \$16.5 million for this purpose. The nondevelopment easement includes land along the Karluk and Sturgeon Rivers and expires on December 2, 2001.

Deal could make Kachemak park accessible by road

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EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

By TOM KIZZIA

Daily News Peninsula Bureau

HOMER — The state Division of Parks announced a land deal Thursday that could clear the way for construction of road-accessible hiking trails through park lands on the Homer side of Kachemak Bay.

The agreement to buy 155 acres of private land will link two small units of Kachemak Bay State Park east of

Homer. The deal, which is scheduled to close in March, calls for the state to pay the appraised value of \$235,000, negotiators said.

Most of 171,000-acre Kachemak Bay State Park is accessible only by boat.

With a contiguous 2,300-acre piece on the Homer side, the state will be able to open up hiking opportunities that can be reached by road, said state parks director Jim Stratton.

"We always hoped to do something on the Homer side of the bay for people who said they didn't have a boat," Stratton said. "This was the missing piece of the puzzle."

The Cottonwood and Eastland Creek units of the park, about 15 miles out East Road from Homer, were added in 1989.

Much of the land is steep and forested, perched above the bay on a 500-foot bluff, but canyons make it possible

to develop trails to the beach.

The state didn't want to develop trails until the two pieces were linked, Stratton said. Only the 1,310-acre Eastland Creek portion was accessible from East Road.

Money for the purchase will come from marine recreation money set aside by the state Legislature as part of the Exxon Valdez oil spill criminal settlement, Stratton said. The Conservation Fund, a national nonprofit land

trust active in Alaska, served as intermediary in the deal.

The land is being sold by Washington state resident Don Waddell, said Brad Meiklejohn, Alaska representative for The Conservation Fund. A small part of the 155 acres has been logged, he said.

Stratton said a trails plan will be developed through a community planning process. Construction should take

place in 1998, he said. Park plans call for day-use parking but no overnight camping, he said.

The agreement calls for the state to grant a 30-foot-wide public easement along one edge of the park to allow Waddell access to 40 acres he is retaining.

That parcel would otherwise be surrounded by private land and the park, said Meiklejohn.

Spill area gains protected forest

By DAVID WHITNEY

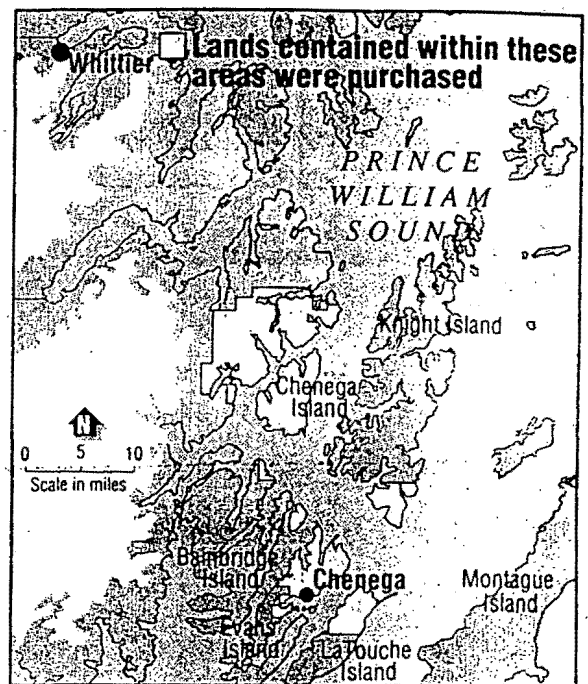
Daily News Washington Bureau

WASHINGTON — Nearly 60,000 acres of prime wildlife habitat on Alaska's Prince William Sound won permanent protection Wednesday in a deal giving Native-owned Chenega Corp. \$34 million for investment and tourism development.

The purchase, using money from the Exxon Valdez oil-spill settlement fund, is the largest chunk of land to be acquired so far from the area hardest hit by the 1989 spill. It includes nearly two dozen streams that are important for salmon spawning.

The deal boosts to more than 500,000 acres the amount of property that has been protected in the spill zone either through outright purchase or by development-restricting easements financed out of the \$1 billion settlement fund.

Please see Back Page, CHENEGA



CHENEGA: Wildlife habitat set aside

Continued from Page A-1

The agreement was signed during an Agriculture Department ceremony by Alaska Gov. Tony Knowles, Chenega Corp. president Chuck Totemoff and Agriculture Secretary Dan Glickman.

Most of the property will go to the U.S. Forest Service for addition to the Chugach National Forest and to Alaska for management as state park lands. Glickman said the deal will open the lands to legal public access for the first time.

Knowles said the Chenega area was "the site of some of the saddest memories from the spill." Some coastal areas were covered with a foot-thick layer of crude oil from the grounded Exxon Valdez tanker, he said.

"Chenega became known

as ground zero of the spill," Knowles said.

Totemoff said the village corporation's decision to sell the property, obtained under the 1971 Alaska Native Claims Settlement Act, was difficult.

But he said shareholders concluded that government ownership would protect habitat for wildlife still struggling from the 11 million-gallon disaster.

Totemoff said that if the property remained in Native hands, the corporation may have been forced to log the areas to raise money.

"I've been to timber harvest areas before," he said. "I just couldn't see doing that to our lands."

Under the deal, the village corporation retains its traditional hunting and fishing rights. Property on Chenega Island remains in the corpo-

ration's hands but with conservation easements protecting it from development.

The largest chunk of land abuts Dangerous Passage on the Kenai Peninsula adjacent to the Chugach National Forest. About 16,000 acres will become state park lands and another 19,000 acres will be added to the national forest. Chenega Corp. retained three sites in those areas for development.

"The agreement holds great promise for our village and shareholders," he said.

A spokesman in Washington said the corporation has 85 shareholders.

Totemoff said proceeds from the sale will be used to build tourist facilities that will earn money for the corporation and to finance historical and archaeological research and preservation projects.

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10 JUNEAU EMPIRE, MONDAY, JANUARY 27, 1997

Eagles are recovered from Exxon spill

■ *It's the only injured species whose numbers returned to normal*

THE ASSOCIATED PRESS

ANCHORAGE — Seven years after the Exxon Valdez oil spill, scientists say the bald eagle is the only injured species whose numbers have returned to normal.

Scientists studying birds and marine life harmed by the 1989 spill in Prince William Sound re-

leased their findings at a three-day symposium that wrapped up Saturday in Anchorage.

The 20 types of birds and sea animals hurt by the spill are classified in four categories — recovered, recovering, not recovering and unknown, said Stan Senner, science coordinator for the Exxon Valdez Oil Spill Trustee Council.

The recovering species include pink salmon, mussels and common murre.

The species whose numbers are still declining include harbor

seals, harlequin ducks, sea otters in the western parts of the sound, marbled murrelets and cormorants.

Scientists don't know whether numbers of black oystercatchers, common loons and clams are rebounding or declining, Senner said.

No one knows exactly how many birds and marine mammals were killed when the Exxon Valdez oil tanker went aground, spilling 11 million gallons of oil. Scientists reported finding the

carcasses of 250,000 sea birds, 1,000 sea otters and 300 harbor seals. They estimate the actual deaths may have been two to three times greater.

Time has helped heal much of the damage done to wildlife and habitat, Senner said.

Studies of the injured species are being funded by \$900 million paid by Exxon in an out-of-court settlement to the state and federal governments. The Exxon Valdez Oil Spill Trustee Council was created to oversee the spending.

Experts say only eagle has overcome '89 spill

By NATALIE PHILLIPS
Daily News reporter

Seven years after the Exxon Valdez spilled 11 million gallons of oil in Prince William Sound, scientists say the bald eagle is the only injured species whose numbers have returned to normal.

The 20 types of birds and marine life scientists identified as harmed by the 1989 spill are now classified in four categories — recovered, recovering, not recovering and unknown, said Stan Senner, science coordinator for

Please see Page B-3, SPILL

Continued from Page B-1

the Exxon Valdez Oil Spill Trustee Council.

The recovering species include pink salmon, mussels and common murre — the seabird hardest hit by the spill.

The species whose numbers are still declining include harbor seals, harlequin ducks, sea otters in the western parts of the Sound, marble murrelets and cormorants.

And scientists don't know whether numbers of black oystercatchers, common loons and clams are rebounding or declining, Senner told an audience gathered at the Hotel Captain Cook Saturday for the final day of a three-

day symposium about the effects of the spill.

No one knows exactly how many birds and marine mammals were killed when the Exxon Valdez oil tanker went aground in 1989. Scientists reported finding the carcasses of 250,000 seabirds, 1,000 sea otters and 300 harbor seals. They estimate the actual deaths may have been two to three times greater.

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Studies of the injured species are being funded by \$900 million paid by Exxon in an out-of-court settlement to the state and federal governments. The Exxon Valdez Oil Spill Trustee Council was

created to oversee the spending.

In the early years, the council members funded studies of individual species believed harmed by the spill. They shifted their focus in 1994. Commercial fishermen in Prince William Sound lobbied for the settlement money to be spent on a broader look at the health of the Sound's ecosystems and how different species inter-related.

"We've tried to take an approach that will have a more lasting value," explained Robert Spies, the Trustee Council's chief scientist. The Trustee Council is funding three ecosystem studies. The council expects to spend roughly \$16 million on stud-

ies this year.

The Sound Ecosystem Assessment study is designed to find why pink salmon and Pacific herring populations in the Sound fluctuate.

The Nearshore Vertebrate Predator project is looking at four indicator species — sea otters, river otters, harlequin ducks and pigeon guillemots — to determine the overall health of the nearshore ecosystem, which is the area where most oil was deposited.

And the Apex Predator Experiment is looking at the availability of small forage fish and how that relates to the health and abundance of common murre, pigeon guillemots and black-legged kittiwakes in the Sound.

JUNEAU — On one hand, Alaska is fighting a lawsuit by Philip Morris Inc. and other tobacco companies and debating a big increase in cigarette taxes to reduce smoking.

On the other, the state's \$20 billion oil-money nest egg, the Alaska Permanent Fund, has made millions investing in Philip Morris stock.

Tobacco-industry critics are questioning the Philip Morris investment, one of the Permanent Fund's biggest stock holdings.

Rick Steiner, who heads the Coastal Coalition, has asked the fund to sell its \$152.8 million worth of Philip Morris shares. The coalition, a citizens environmental group, formed after the Exxon Valdez oil spill in 1989, also wants the Permanent Fund to sell off its \$51 million in Exxon stock.

Steiner said the Permanent Fund investment in Philip Morris contradicts state officials' efforts to fight smoking.

Gov. Tony Knowles and four legislators have introduced bills that would raise cigarette taxes by \$1 or more a pack. Knowles and other leaders also said they were outraged by a lawsuit Philip Morris and three other cigarette companies filed this month to prevent the state from suing over smoking-related

medical expenses.

"The governor and legislators feign this self-righteous indignation over smoking, then the state gives the tobacco companies millions of dollars to play with," Steiner said.

Anne Marie Holen of Citizens to Protect Kids from Tobacco, said the state's position on tobacco appears inconsistent.

Permanent Fund managers say they cannot bind their outside investment firms to any social test when picking stocks. Outside firms manage all of the fund's \$10.3 billion in stocks.

"Their stock selections are based entirely upon the financial strength and their opinion of the company, not on the basis of the companies' social obligations or policies," Permanent Fund director Byron Mallott said in a recent letter to Steiner.

In stock value alone, the fund's investments in Philip Morris over the years have grown about \$66 million over the cost of the stock. The Permanent Fund also has taken



Steiner: State should get rid of Philip Morris shares.

in millions of dollars in Philip Morris shareholder dividends.

Besides its 1.3 million Philip Morris shares, the Permanent Fund owns about \$44 million of stock in five other tobacco companies. Tobacco shares account for nearly 1 percent of the fund's total assets and 1.9 percent of its stock holdings.

Terry Brown, the fund's chief investment officer, said restrictions on the fund's stocks might reduce earnings, which could affect annual dividends the fund pays to most Alaskans. Last year's Permanent Fund dividend was \$1,130.

Brown said it would be up to Knowles and the Legislature to establish a policy defining socially objectionable stocks.

Knowles spokesman Bob King said the governor does not want to meddle in investments by the Permanent Fund.

"We feel the best way to send a message to the tobacco industry is to raise the tax on cigarettes and educate kids about the dangers and addictiveness of tobacco,"

Tobacco foes call for fund to sell stocks

By DAVID GERMAIN
The Associated Press

ANCHORAGE DAILY NEWS
TUESDAY, JANUARY 23, 1997
METRO B-1

King said.

Other investments can be substituted without hurting a fund's performance, said Steve Schueth, president of the Social Investment Forum, which discourages investment firms linked to health or environmental problems.

"It sounds like Alaska is not too clear in its viewpoint on tobacco," said Schueth, vice president of Bethesda, Md.-based Calvert Group, which manages mutual funds that avoid tobacco stocks. "They're raising taxes and trying to dissuade people from using the stuff, but they're profiting off tobacco, as well."

Sen. Johnny Ellis, D-Anchorage, sponsor of one of the tobacco-tax bills, said he's bothered by the Permanent Fund's tobacco holdings but that the Legislature probably would not support investment restrictions.

House Speaker Gail Phillips, R-Homer, said Permanent Fund managers have done a good job racking up profits and that they would be hindered by any sort of socially responsible investment policy.

Power lines at SeaLife Center to come down

THE SEWARD PHOENIX LOC
THURSDAY, JAN 23, 1997

By Eric Fry

LOG Staff

The city will remove overhead electric lines in front of the Alaska SeaLife Center and reroute service, as a compromise solution to the standoff between the center and the city Planning and Zoning Commission.

City officials estimated the cost of changes at \$100,000, with the SeaLife Center's share capped at \$50,000.

The decision relieves the SeaLife Center of a prior requirement to place the lines underground at its own expense, estimated at between \$350,000 and \$500,000, said executive director John Hendricks.

"Fifty thousand dollars to make a better-looking SeaLife Center is worth it," Hendricks said. "But

\$500,000 to make a better-looking SeaLife Center gets into the area of poor management and poor judgment."

The planning commission, in a conditional use permit issued in September 1994, had required the SeaLife Center to put underground the city's electric lines on Railway Avenue that run in front of the center's site, including its parking lot east of the building.

The city's comprehensive plan supports placing lines underground, but no other project has been required to do so.

The compromise will remove lines along Railway only from Hoben Park to Third Avenue. It also will remove two lines that cross Railway from alleys between Third

and Fifth avenues.

But, ironically, it forces the city to add one new electric pole on Washington Street at the end of Second Avenue, plus two spans of electric lines along Washington from Second to Brownell Street. Those additions are up already and have drawn a couple of citizen complaints about harming the view, City Manager Ron Garzini said.

Why the new lines above ground? Under the plan, lines along Railway that now feed Lowell Point will be removed. Instead, lines will feed Lowell Point from Brownell Street, said city utilities manager Dave Calvert. The new pole and lines connect to a feeder line in the alley between Second and Third avenues.

The planning commission accepted the compromise at its Jan. 10 meeting. In December 1996, when the SeaLife Center first asked to be relieved of the underground condition, some commissioners strongly opposed dropping it. That spurred the city to look for another way to remove the lines.

SeaLife Center representatives argued in December that putting the lines underground was expensive and would require more archaeological monitoring. The SeaLife Center has spent about \$100,000 so far on archaeological work, spokeswoman Maureen Sims told the commission.

An area near the Third Avenue electric pole already has been determined eligible for the National Register of Historic Places because of artifacts and sea mammal bones found there in 1995.

Archaeologist Mike Yarborough, under contract with the SeaLife Center, has said the area is part of the Lowell family's late-19th century homesite.

Planning commissioner Anne Castellina said in December that SeaLife Center officials knew the archaeological costs ahead of time and had told the commission in 1995 they had budgeted to put the electric lines underground. What happened to the budgeted money? commissioners asked.

When the SeaLife Center agreed to the conditional use permit, it did-

n't understand the scope of work to put the lines underground, said Darryl Schaefermeyer, administrator for the Seward Association for the Advancement of Marine Science, the center's developer.

The center doesn't want to spend its construction contingency funds on the electric lines, he told the commission, because some items, like furnishings and outdoor canopies, aren't fully budgeted.

The SeaLife Center issued construction drawings and bid documents in January 1996 that showed the lines would not be placed underground. But it wasn't until nearly a year later that the center asked to be relieved of the condition.

The SeaLife Center's preparations to connect its on-site electricity to a pole at the end of Third Avenue in October 1996 damaged the previously identified archaeology site, and brought the issue to public attention.

Hendricks said recently that the center will no longer dig in the archaeological zone. "We are not going to risk disturbing anything else," he said.

METRO

ANCHORAGE DAILY NEWS

THURSDAY, January 16, 1997

Whittier road a bad idea

Kudos to the environmentalists for their attempt to stop the Whittier road project. The state of Alaska could better appropriate federal highway funds to repair or fix existing roads. I have an idea, how about paving the entire road between Paxon and Cantwell?

Who but the Coast Guard will monitor the slew of weekend recreationists and make sure bilges are not pumped at sea and trash is not scattered across the Sound? There will be people in hot pursuit of the fall coho run who will inevitably forget to take into account the wind and tidal currents.

The Division of Tourism is a big supporter of this project. Whom do they represent? Aren't they a mouthpiece for the cruise ship industry? I do not negate the fact that the tourism industry is vital to Alaska, but this industry needs monitoring.

I find it ironic that Exxon Valdez oil spill restoration money is funding part of this project. I thought that this funding was designated for restoration.

— Tammy Chisum
Dutch Harbor

Exxon research program topic of lunch meeting

A representative of the Exxon Valdez Trustees Council will be in Kodiak tomorrow at noon to discuss the council's continuing research program.

"Either Stan Senner, our scientific coordinator, or I will be in Kodiak to talk about the research program and its future," said Molly McCammon, the Trustees Council's executive director.

The Exxon Valdez Trustees Council oversees spending of the \$1 billion Exxon fine as a result of the 1989-oil spill.

"The council has set aside \$48 million in the restoration reserve, McCammon said. "The plans are to commit from \$130 to \$140

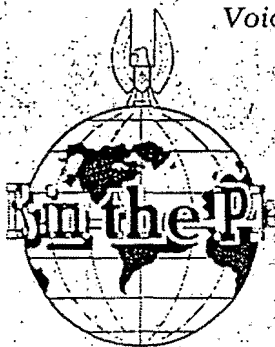
million as a long term reserve.

"We're now in the planning process of how to administer those funds," she added. "For example, should we keep the funds in perpetuity and spend the earnings, or should we plan to spend down the fund over ten years?"

McCammon said she is coming here at the request of a local fisherman and attorney.

"This is the result of a request from Dan Ogg," McCammon said. "He knew the reserve was being formed and he asked for more information."

The meeting will be held at noon on Wednesday, Jan. 15 at the Second Floor Restaurant.



A Hearst Newspaper

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Forest director is correct

The new head of the beleaguered U.S. Forest Service has made a promising start in a difficult job.

Mike Dombeck began his stint as the agency's 14th chief by delivering a vigorous defense of the nation's environmental laws to the agency's employees.

Dombeck, the 48-year-old former acting director of the Bureau of Land Management, correctly told his employees that the agency's first priority must be to restore and protect the health of the land.

And he reminded them that "no Forest Service program has dominance over another . . . Timber is not more important than wildlife and fisheries" nor, he added, are wildlife and fisheries more important than timber, recreation or cultural resources.

Given the effort of some Republican lawmakers to weaken the nation's environmental laws, Dombeck showed

admirable, and unusual, bureaucratic spine when he noted, "This country is blessed with having elected people of foresight and wisdom who just a few decades ago gave us a legacy that included the most progressive and effective network of conservation law in the world. And they have worked

"We are a better, more secure and stronger nation because of laws such as the Clean Water Act, the National Environmental Policy Act, the Endangered Species Act and the National Forest Management Act.

"These laws represent the conservation values of mainstream America. Do not be disturbed by the debate surrounding their execution. Don't worry about it. This is background noise to a complex society and a healthy, properly functioning democracy."

We couldn't have said it better.



The ex-chief's advice

Forest Service needs a bipartisan effort to clarify its mission

The Forest Service has a reputation among scholars of government as a "superstar" agency — the "can-do" agency. A clear vision of what the Forest Service is to do rests with elected officials.

That vision must be produced by a bipartisan effort. Only a unified drive could clarify the muddy morass of uncoordinated laws, out-of-date regulations, shining policy direction, budget decisions, overlaps in agency responsibilities, disagreements between Congress and administration, and inconsistent court actions that combine to "guide" the agency.

Since my retirement as chief of the U.S. Forest Service in late November, numerous interviewers have asked, "What are the primary problems that you

faced?" Among these were:

1. Lack of a clear mission.
2. Operating under laws that mesh poorly with effects exacerbated by overlapping responsibilities of several agencies and a wide-range of sometimes confusing court decisions.
3. Micromanagement (in other words, politicization) of agency activities by Congress and political appointees.
4. Continued downsizing with inadequate consideration of what is expected of the Forest Service.
5. Demonization of the Forest Service by extremes in the debate over public-land management.

Such problems can be addressed through bipartisan action over the next two years.

Why now?

Republicans gained House and Senate control in 1994 — partially from a backlash against extreme environmentalism. Some perceived a mandate to dismantle environmental laws and public-land ownership. They failed and suffered for the effort.

In the meantime, Democrats maintained that no problem existed except compliance with the laws.

both were wrong.

Problems are worsening. It is time to face reality. Maybe the time has come for a bipartisan overhaul of the laws that effect the Forest Service.

In addition, micromanagement by Congress inhibits rational management — particularly during downsizing. For example, the Forest Service must have clearance from six separate congressional committees to close a ranger district or to combine two of them. The agency's budget requires spending on pet congressional projects, causing resources to be diverted from higher priorities.

Micromanagement from above the chief's level is even more disconcerting. Direct orders from Agriculture Department and administration levels to the forest supervisors that bypass lines of authority produce confusion, consternation, inconsistency, embarrassment and a breakdown in discipline and order.

Appointed officials should set policy and hold the agency responsible to carry it out. Mixing of policy and execution functions produces disorganization.

As downsizing proceeds, the administration and Congress tend to increase centralized control. That is a mistake. During downsizing, managers need more flexibility, not less. The heart of government reinvention was decentralization of authority and encouragement of innovation.

These problems lead to a tendency to scapegoat employees for their performance under the situation described earlier. Though politically convenient, it is inexcusable over the long term.

The seeds of failure lie in the worsening situation that has been allowed to drift for over two or more decades. Federal courts have been reluctantly thrust into this vacuum to interpret intent of the mishmash of law, regulation, regulating activity and poorly related court opinions.

Scapegoating has helped foster increasing violence against personnel and property. Forest Service folks continue to do their best and wait for cries of outrage and effective response from political leaders.

Enough!

It is time to address underlying problems and eschew political temptation to wag fingers at the executors of confused policy, judicial mandates and divided management authority.

The national forests and grasslands, all 194 million acres, are our lands. This heritage is unique in the world. We all have a stake in those precious lands.

Some would take advantage of current confusion and turmoil to devolve these lands into other ownership or control. I have little doubt as to what such a move made in the name of effi-

Jack Ward Thomas was a wildlife biologist in La Grande when he was appointed chief of the U.S. Forest Service in 1993.

flexibility to be the superstars they have been for a century.

The people of the Forest Service can and should be conservation leaders for the third millennium. They can — but only if the described problems are forthrightly addressed.

That can be done. But it requires leaders with a clear vision and the guts to take on such a contentious subject.

The Forest Service has a new leader — the 14th chief in a long green line. Michael Dombeck is a career professional with extensive Forest Service experience. He packs all the right gear. But he needs help.

Steering a ship with a malfunctioning rudder and too many co-captains is excruciatingly difficult; I know from experience. He, the Forest Service and the American people deserve better.

clency today would produce over coming decades.

Almost as threatening is the temptation to political figures, facing the consequences of government operations under a balanced budget scenario, to use national forest lands or timber as trading stock to achieve pressing objectives of the moment.

The National Forests were put together too laboriously, meticulously and expensively over a century to be dismantled piecemeal to accomplish political objectives of the moment. This precedent is politically seductive but potentially disastrous over the long term.

The men and women of the Forest Service are among the best in the world at what they do. They need only a clarified mission and adequate

Nanwalek leader Kvasnikoff dies; known as singer

Helped sell land to national park

By TOM KIZZIA
Daily News reporter

Robert "Bobby" Kvasnikoff, a village leader who spoke eloquently about Native land and health issues but did his most passionate talking with his electric guitar, died Thursday at his home in Nanwalek of complications resulting from AIDS.

Kvasnikoff, 43, was probably best known as the lead guitarist and singer for the English Bay Band. The Native rock and roll band won local fame at the Alaska State Fair and statewide Native gatherings, often performing songs Kvasnikoff wrote. A tape of original work, called "Some Nights It Works," was released by the band in 1993.

As chairman of the English Bay Corporation, Kvasnikoff played an important role in negotiations to sell village holdings inside Kenai Fjords National Park to the federal government. Negotiations to purchase 34,000 acres are still continuing but look promising, federal officials said this week.

When he learned in 1991

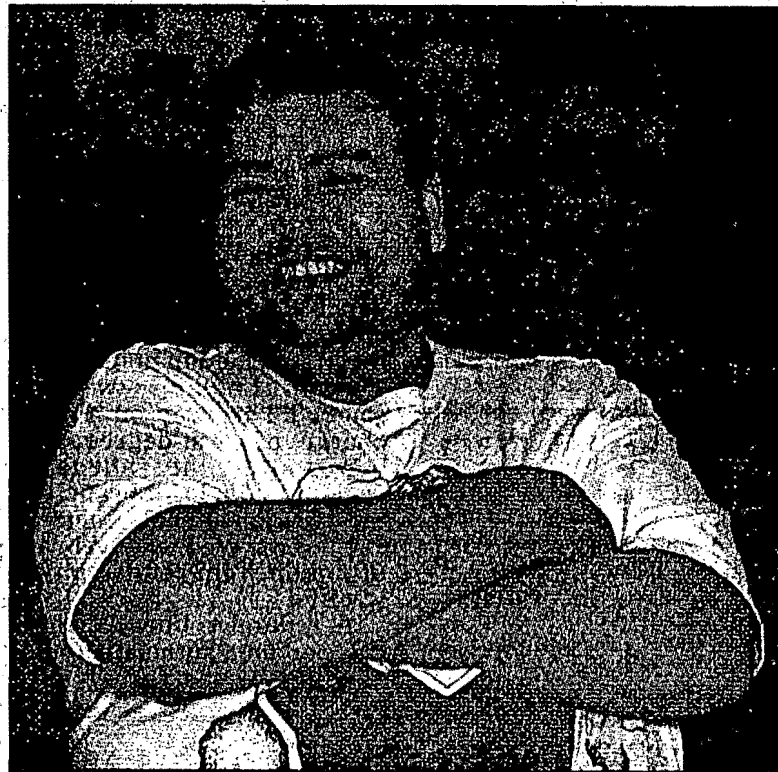
that he was infected with the AIDS virus, Kvasnikoff made the diagnosis public. He used the opportunity to address Native youth about safe sex and dangerous health practices, recording a public service announcement for use in Alaska.

Within the tight-knit community of Nanwalek, which sits at the entrance to Cook Inlet, Kvasnikoff was the impresario of special events.

Formerly known as English Bay, the remote Chugach Eskimo village of 200 has a particular tradition of holding pageants and dances, often featuring the band led by Kvasnikoff and two of his brothers.

"Whenever we had any community holiday, Bobby was always the grand master," said his sister, Sally Ash, a member of the village council. "But Christmas was his big holiday."

Kvasnikoff learned to play guitar as a boy during the quick-paced polka marathons around the New Year's celebration. Fully grown to more than 300 pounds before his



ERIK HILL / Anchorage Daily News

Known as a guitarist and Native leader, Robert Kvasnikoff used his illness as an opportunity to teach Native youth about safe sex and how to stay healthy.

illness, he assumed the roles of St. Nicholas and Santa Claus during the holidays.

Three years ago, after he lost his house to a fire, Kvasnikoff interrupted rebuilding and nailed together his new rafters as bleachers for a New Year's pageant.

Christmas, celebrated in Nanwalek on the Julian calendar, occurred last Tuesday. Ash said her bedridden brother's condition had grown worse in recent weeks

but he wanted to hold on through the holiday.

Children and families were starring — a Russian Orthodox carolling tradition — when Kvasnikoff died Thursday afternoon. Carolers interrupted their rounds and went to his house by the lagoon for a service.

Kvasnikoff leaves his wife, Susan, and eight children.

Funeral services are scheduled for today in Nanwalek.

SATURDAY, January 11, 1997

ANCHORAGE DAILY NEWS

MEMRO

The Anchorage Times

Publisher: BILL J. ALLEN

"Believing in Alaskans, putting Alaska first"

Editors: DENNIS FRADLEY, PAUL JENKINS, WILLIAM J. TOBIN

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ANCHORAGE DAILY NEWS, TUESDAY, DECEMBER 31, 1996

Tour boat worst example

In the Whittier Road article ("Tourism industry split over Whittier highway," Dec. 8) Brad Phillips portrays himself as an innocent victim when this couldn't be further from the truth. Kayakers are the least impacting of any group in the Sound. In fact, the largest kayak user group, the National Outdoor Leadership School, teaches zero-impact camping. While some kayakers do poop on the beach, it's Brad Phillips' boat the "Klondike Express" and its notorious high-speed wake that turns their poop into sub-atomic particles as it slams the beaches. What does he do with the waste on his boat?

Other tour operators recognize the importance of managing their wakes both to the long-term health of the ecosystem and coexistence with other vessels. This type of logic is absent on Mr. Phillips' tour boat. Furthermore, you can hear him coming an hour before he arrives. His vessel already operates at or near capacity. Who is the greedy one? While the hordes of private boats will also impact the Sound, big tourism is behind this project. How can they pretend to be innocent?

Equally absurd is Carl Portman's (Resource Development Council) statement that the Sound is a "private playground for an elitist few who are healthy enough to paddle a kayak 100 miles." For his information there are private, tour, fishing and charter boats; airplanes, jet skis, sailing vessels, cruise liners, oil tankers, logging, mining, fish hatcheries, cabins, villages, towns, and more. Mr. Portman, where have you been?

— Ted Raynor
Anchorage

in Seward tops project list in 'above-average year'

By Ingrid Martin

Alaska Journal of Commerce

By the numbers, construction activity in Alaska grew moderately in 1996, though the plethora of projects taking shape suggests more aggressive growth.

The Associated General Contractors of Alaska estimated approximately \$1.2 billion was spent, making it a "slightly above-average year."

The Alaska SeaLife Center construction project that got under way this summer in Seward was, by far, the largest. Strand Hunt Construction holds the \$27.5 million general construction contract for the center, slated for completion in May 1998. The \$50.5 million center will be a marine research, wildlife rehabilitation and public education facility. The last structural steel beam was hoisted into place in early December.

Fairbanks boasted at least three sizable construction undertakings for 1996. The North Star Borough awarded a \$15.1 million contract to Gaston & Associates to remodel and build an addition onto Lathrop High School. That work began last summer.

Elsewhere in Fairbanks, the state Department of Transportation and Public Facilities is spending \$11 million for Swalling Construction Co. Inc. to build a highway interchange and overpass on the Parks Highway at Chena Pump and Geist roads.

Barely five miles east, Tyler Cook has put Ghemm Co. Inc. to work building a \$6.5 million, 60,000-square-foot, two-story Aurora GM sales and service center, slated for completion in February.

In Anchorage, Unit Co. holds an \$8 million contract for the U.S. Postal Service's Postmark

Drive facility expansion, now under way.

Watterson Construction began work in spring on a pair of buildings for First National Bank of Anchorage, both expected to be complete by February. The \$7.9 million, 72,000-square-foot, four-story Eastchester Service Center at 16th Avenue and Ingra Street will consolidate data-processing functions, new imaging equipment and support services.

The \$6.5 million, 40,650-square-foot, four-story SouthCenter corporate headquarters building, at 36th Avenue and A Street, will centralize lending functions and include a parking garage.

Hotel construction was brisk. Among up-and-comers is NANA Regional Corp. and Marriott International Inc.'s 154-room Marriott Courtyard hotel at Spenard Road and Aviation Drive. The \$15 million project is being built by Davis Constructors & Engineers Inc. and will open June 1.

The city's first speculative commercial warehouse was built in the East Dimond Industrial Center this year. Builder-developer Mike Slattery's \$1.5 million, 22,400-square-foot, two-building project had its first tenant by mid-December.

South of Talkeetna, Princess Tours' fourth resort property in Alaska, the 162-room Mount McKinley Princess Lodge will open May 12. The \$25 million development includes the addition of two rail cars to Princess' fleet to transport guests from Anchorage and Fairbanks. Princess Alaska Hotel Properties is the general contractor.

Statewide, a host of school, road and government housing construction projects was undertaken, and several mega-projects, begun in prior years, continued.

Among them, the \$38 million, 206,000-square-foot Anchorage state courthouse was completed in May. In June, the Mount Roberts Tramway in Juneau sent its first visitors up the slope, although its visitor center was not yet complete. The operation will go into full service next summer.

Amax Gold's Fort Knox gold mine near Fairbanks, which cost close to \$500 million to

develop, was to begin production this month, after more than 20 months under construction.

Ellis-Don Construction Co. will complete the \$107.8 million, 376,000-square-foot Alaska Native Medical Center on Tudor Road in Anchorage this month; it will open to patients in June. On the same block, Cook Inlet Tribal Council Inc.'s alcohol treatment center, the Ernie Turner Facility, will open this month; Indian Health Services Alaska Area offices will be ready for occupancy in April; and Cook Inlet Regional Corp.'s Alaska Native Primary Health Care Center, being built by Neeser Construction, also will open in June.

The Healy Clean Coal Project, a \$267 million, 55-megawatt power plant to be owned by the Alaska Industrial Development and Export Authority, could be ready for demonstration operations by late 1997.

M.A. Mortenson of Minneapolis is building the third Medical Group Composite Medical Facility. The 430,000-square-foot, \$157 million package on Elmendorf Air Force Base is slated for completion in October 1998.

ADN
12/28/96

Parks overseer Frampton leaving

By DAVID WHITNEY

Daily News reporter

WASHINGTON — George Frampton Jr., assistant secretary of the Interior Department overseeing national parks and wildlife refuges, said Friday that he will step down Feb. 14.

Frampton, responsible for managing and setting policy on millions of acres of federal lands in Alaska, said in an interview that he intends to take a few months off before pursuing other opportunities in the natural resources field.

"I've been doing the same kind of issues for 10 years without a vacation," Frampton said. "I have two teenage sons

and I want to spend some time with them."

Interior Secretary Bruce Babbitt released a statement praising Frampton's work, ranging from measures to restore Florida's Everglades to conservation planning in coastal California counties.

Babbitt also cited Frampton's close personal involvement and cooperation with Alaska in using money from the settlement of Exxon Valdez oil-spill litigation to buy fragile lands around Prince William Sound.

"His knowledge and skill will be greatly missed here," Babbitt said.

Frampton submitted his resignation

in a letter to the White House Dec. 20. The official announcement was delayed to give Frampton, who is spending the holidays in Colorado on a skiing vacation with his family, time to notify his staff.

Frampton was among the more controversial nominees of the Clinton administration four years ago.

A trial lawyer active in environmental litigation, Frampton took the job after resigning as head of the Wilderness Society where he aggressively fought to stop industrial logging in Alaska's Tongass National Forest and prevent oil

Please see Page B-3, **FRAMPTON**

FRAMPTON: Interior official will leave in February

Continued from Page B-1

drilling on a coastal strip of the Arctic National Wildlife Refuge.

Frampton's 1993 confirmation hearings before the Senate Energy and Natural Resources Committee were peppered with charges and attacks by Sen. Frank Murkowski, an Alaska Republican who now is chairman of the panel.

Frampton's confirmation followed steady efforts to distance himself from some of the harsh rhetorical attacks he mounted against Alaska's political leadership while head of the Wilderness Society.

During his four years as assistant secretary, Frampton successfully rebuilt many of the frayed relationships he had generated in Alaska, where about 130 million acres are reserved as national parks and wildlife refuges under his authority.

Frampton led the Interior Department's efforts to cooperate with then-Gov. Wally Hickel, who was Interior secretary under President

Nixon, to dedicate large portions of Exxon Corporation's \$1 billion settlement to buy Native-owned properties around Prince William Sound.

He also cooperated with the state to promote a demonstration project near Fairbanks where the latest technology is being used to burn coal for power generation.

"More than any other assistant secretary in my memory, George has had a personal interest and involvement in Alaska issues," said John Katz, top Washington aide to a string of Alaska governors.

Philosophically, Frampton was often at odds with promoting and oil development interests in Alaska. He helped lead the administration's opposition to oil exploration on the coastal plain of the Arctic National Wildlife Refuge, for example, and resisted efforts by miners and others to open up access across federal lands.

But industry representatives weren't all negative.

Becky Gay, of the pro-business Resource Development Council of Alaska, described Frampton as "formidable opposition. He came in totally biased against any access on the national conservation system units, and I guess I'd say he was fairer than I thought he'd be... More balanced."

Frampton was criticized recently, although not by name publicly, by Alaska Gov. Tony Knowles for working to massage logging decisions in a new management plan for the Tongass National Forest in an effort to prevent wildlife listings under the Endangered Species Act.

Among some environmentalists, Frampton fell short of expectations.

"George has been a breath of fresh air after 12 years of Reagan-Bush," said Allen Smith, Alaska regional director of the Wilderness Society that Frampton once led.

"But we are a little disappointed he didn't do more to turn things around after the previous two administrations," Smith said. "There's a lot of unfinished work that we wished he would have gotten to."

Frampton said he is disappointed by his work in trying to move the federal bureaucracy away from a heavy-handed approach to land management and toward more cooperative consensus building with states and affected land users.

"We've begun to change radically the way natural resources are managed," Frampton said.

"With the Endangered Species Act, we are now taking a more entrepreneurial approach. Rather than using it as a single-species regulatory tool, we're now using for multi-species planning with multiple levels of government and stakeholder involvement."

State sells 44 leases

Oil and gas auction raises \$3.1 million

By STAN JONES
Daily News reporter

After a tumultuous run-up, the Knowles' administration's Cook Inlet oil and gas lease auction went off quietly Wednesday.

The state sold 44 of the 234 leases it offered, raising about \$3.1 million that will be split among the state treasury, the Alaska Permanent Fund and a trust that holds and manages land for the benefit of Alaska's mentally ill.

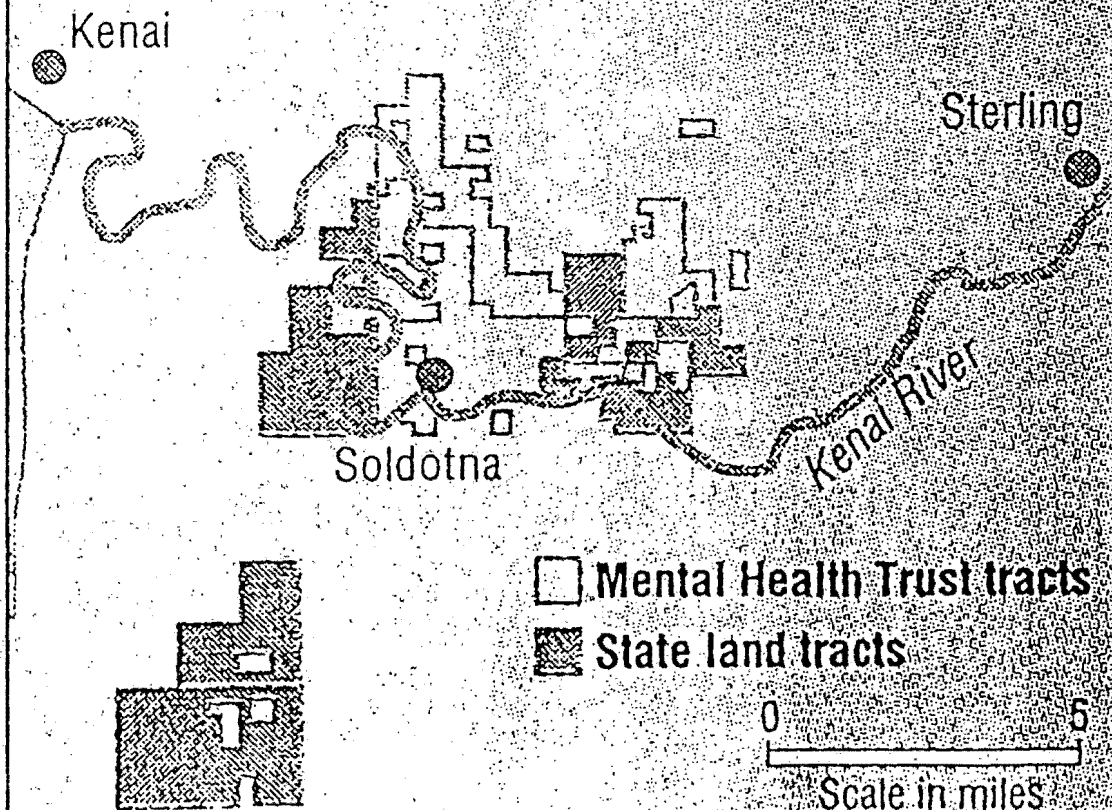
Though most tracts didn't sell, some that did were among the most sensitive in the sale: they lie along the Anchor and Kenai rivers, and in the Ninilchik and Homer areas. Gov. Tony Knowles announced Tuesday that drilling will be banned for three months on those tracts while measures to protect the environment are devised.

But John Shively, Knowles' commissioner of natural resources, said after the sale that none of the sensitive tracts would be closed permanently to drilling.

The sale, which offered a little more than a million acres beneath and beside Cook Inlet, was preceded by so far unsuccessful court challenges from environmental groups and Knowles' last-minute pledge to let sale opponents help set up the protective measures.

None of the opponents was in evidence at the sale, held in the basement of Anchorage's Loussac Library, and Ken Boyd, state director of oil and gas, read off the bids in less than an hour. Afterward, Boyd said he hadn't been quite sure what the sale would produce. "It's a little higher than I expected," he said of the \$3.1 million take.

Oil and gas tracts near Kenai River leased Wednesday



Source: Department of Natural Resources

Thursday, December 19, 1996

Anchorage Daily News

The biggest bidder Wednesday was a partnership of Unocal Corp. and Miami-based Forcenergy Inc. The partnership bought 17 tracts for a total of \$1.7 million.

Kevin Tabler, Unocal's Anchorage-based land manager, said Cook Inlet is the company's base in Alaska and Unocal was happy to see all the new interest in its home turf.

"Some companies are on the North Slope," Tabler said. "We're in Cook Inlet."

Unocal's partner is a relative newcomer to Cook Inlet. Russell Porter, Forcenergy's executive vice president, said the company has been sniffing around the Inlet since hearing last spring that Shell Oil was trying to sell leases in the area.

Forcenergy didn't get any Shell leases, according to Porter, but it has been a big buyer in Cook Inlet since October, when it acquired eight leases from Danco Exploration, another Florida company. Last week, it bought \$128 million worth of Cook Inlet and Prudhoe Bay oil properties from Marathon Oil. This week, just before the Cook Inlet sale, it announced its partnership with Unocal, which calls for Forcenergy to put \$30 million into Cook Inlet projects. Porter said the company will open a small Anchorage office early next year.

"Our process is to get some production, get some cash flow and an operating base, learn the business and expand," Porter said.

During Knowles' three-month drilling moratorium on leases along the Kenai River or south of Ninilchik, he will try to get what he calls "stakeholders" in the lease — everyone from environmentalists to local residents to the oil and gas industry — to agree on how to protect

the environment on the moratorium tracts. Shively said he didn't expect the process to change the minds of those who consider oil drilling "absolutely inappropriate."

But he said he hoped the process would satisfy people in the middle — people not strongly pro-drilling or anti-drilling, people who are asking, "If we're going to do this, is there a way to do it that doesn't threaten the Kenai River?" The Kenai is a popular recreation and fishing river.

Still, when Shively was asked

Wednesday if the moratorium and the stakeholder process could lead to some tracts being permanently closed to drilling, he answered with a flat "No."

"So what's the point?" said Nina Faust, co-president of the Kachemak Bay Conservation Society. "If the state is saying it's going to go forth anyway, it kind of takes the wind out of the sails of the stakeholder meetings."

But Faust said she expected to participate in the stakeholder process. One thing she wants: an

agreement to keep oil and gas activities at least a half-mile from rivers and other water bodies. Catherine Cassidy, who chairs the Kenai Watershed Forum, also called for a larger setback than the quarter-mile specified in the leases.

That may not be much of a problem. "A quarter-mile setback is probably not enough," Shively said after the sale.

Another item on Faust's wish list may be harder to sell. She thinks the oil and gas industry should put up the money for an independent, non-profit group to monitor its activities on the leases sold Wednesday.

"That's totally unnecessary," said Unocal's Tabler. "We have federal and state agencies that that is their function. We pay them in tax dollars to do that."

Of the \$3.1 million collected Wednesday, about \$550,000 will go to the Alaska Mental Health Trust Authority. The trust was set up two years ago after a court required that certain state land be set aside and managed to raise money for programs for the mentally ill.

State law generally requires that oil and gas leasing be managed on mental health land the same as on other state land.

The rest of the money will be split evenly between the state treasury and the Permanent Fund.

THE ALASKA JOURNAL OF COMMERCE

PEOPLE

Honan named SeaLife Center marketing head

Thomas F. Honan has been named marketing director of the Alaska SeaLife Center in Seward.

Honan will be responsible for developing the center's marketing plan and outlining the center's role in the state's industry.

"The Alaska SeaLife Center will create an excellent opportunity to showcase the stunning wildlife of Resurrection Bay and the Gulf of Alaska," Honan said.

Honan served the past three years on the Alaska Tourism Marketing Council and served four years on the Alaska Visitors Association Marketing Council.

"Tom brings to the Alaska SeaLife Center a wealth of knowledge about the Alaska visitor industry and successful marketing," John Brundage, SeaLife executive director said.



Honan

OIL POLLUTION BULLETIN

13 Dec. 1996
Vol. VIII, No. 25

The International Newsletter on
Oil Pollution Prevention, Control, and Cleanup

From World Information Systems and
the Center for Short-Lived Phenomena

Inside This Issue . . .

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- International consortium receives contract to develop spill control program in Thailand page 6
- RSPA seeks comments on improving response planning regulations for onshore pipelines page 6

Bitor shows spilled Orimulsion can be contained and recovered

Contrary to claims made by certain environmental groups, the Venezuelan fuel product Orimulsion can be effectively contained and recovered if it spills into the marine environment, according to Nelson Garcia Tavel, vice president of operations and environmental affairs for Bitor America Corp. of Boca Raton, Florida. Orimulsion—a fuel product composed of bitumen particles suspended in water—does not float on the water's surface when spilled; rather, it settles into the water column at depths of six to ten feet. Orimulsion's tendency to settle beneath the water's surface when spilled has led some environmental groups to question whether responders could effectively contain and clean up an Orimulsion spill. However, in a demonstration that Bitor conducted during October off the coast of Venezuela, the company successfully contained an 86-gallon Orimulsion spill and recovered over 80 percent of the spilled product, according to Tavel. "The impressive results of this test should prove once and for all that we have the proper equipment and procedures for containing and recovering spilled Orimulsion and protecting the environment," Tavel said.

Although Orimulsion is burned by power plants in Canada, China, Denmark, Japan, and the United Kingdom, the product's use in the United States has been strongly opposed by U.S. environmental groups.

Continued on page 2

Symposium book assesses impacts from Exxon Valdez spill

Many of the fish and wildlife species injured by the 1989 Exxon Valdez oil spill in Prince William Sound, Alaska, "have not yet fully recovered" almost eight years after the spill, according to the editors of a new book on the impacts of the Exxon Valdez oil spill. The book, which was released last month by the American Fisheries Society (AFS), contains 61 technical papers that were first presented during February 1993 at an AFS-sponsored symposium in Anchorage, Alaska (OPB, 12 Feb. 1993, p. 7). Most of the research presented at the AFS symposium was conducted or sponsored by the federal and state trustees for the areas affected by the Exxon Valdez spill. Notably absent at the AFS symposium were presentations from Exxon and its contractors who, despite invitations from the event's organizers, declined to attend, opting instead to present their data at a symposium held by the American Society for Testing and Materials (ASTM) in Atlanta, Georgia, during April 1993 (OPB, 7 May 1993, p. 1). ASTM published the 25 papers presented at its symposium in a separate book late last year (OPB, 15 Dec. 1995, p. 1).

The papers presented by Exxon's scientists at the ASTM symposium and those presented by the federal and state trustee researchers at the AFS symposium expressed very different opinions regarding the long-term impacts of the spilled oil from the Exxon Valdez. The trustee-sponsored research presented at the February 1993

Continued on page 3

in electrical plants. Bitor, Venezuelan parent companies—Bitumen, Orinoco and Petroleos de Venezuela—own the rights to 1.2 trillion barrels of bitumen in northern Venezuela, including 267 billion barrels that are economically recoverable, according to Bitor.

The recent offshore demonstration to prove the feasibility of cleaning up spilled Orimulsion was conducted in the Caribbean Sea about 15 kilometers north of Anzoategui, Venezuela. After deliberately spilling 86 gallons of Orimulsion, Bitor crews encircled the spilled product with 150 feet of OriBoom—containment boom whose “skirt” material extends about 10 feet beneath the water’s surface. Aerial observations were made, and water samples were collected both inside and outside the boom to determine its effectiveness. According to Bitor’s Tavel, the OriBoom, which is made by Cape Canaveral Marine Services Inc. of Cape Canaveral, Florida, “did its job and successfully contained the spilled Orimulsion.” Once the Bitor crews had contained the test spill, they deployed a submersible pump made by Frank Mohn Flatoy A/S of Flatoy, Norway, to recover the submerged product. The Framo device pumped a mixture of water and spilled Orimulsion into a storage tank aboard a Bitor spill response vessel, where an inclined-belt skimmer made by Action Petroleum Spill Recovery Inc. of Ducktown, Tennessee, separated the recovered Orimulsion from the recovered water. “More than 80 percent of the spilled Orimulsion was recovered” by Bitor’s pumping and skimming system, Tavel said.

The test results impressed several U.S. spill experts that Bitor had invited to witness the exercise, including Mark Miller, president of the National Response Corp. (NRC), Ken Dickson, director of the Institute of Applied Science at the University of North Texas (UNT), and Brian Basel, the U.S. Coast Guard’s (USCG’s) Captain of the Port for Tampa, Florida. “All those in attendance were quite satisfactorily impressed with Bitor’s ability to remove Orimulsion from the open sea,” NRC’s Miller said. “In particular, I was impressed with OriBoom and its ability to contain the spilled Orimulsion,” according to Miller. “I firmly believe that Bitor has found the answer to the heretofore vexing problem of recovering spilled Orimulsion in the marine environment,” Miller added. UNT’s Dickson said he too was “very impressed with the performance of the containment and recovery equipment.” According to Dickson, Bitor “certainly demonstrated the feasibility of cleaning up an Orimulsion spill.” USCG’s Basel called Bitor’s 80-percent recovery rate “significant,” noting that “the historic industry average for oil spill recovery is about 15 to 20 percent.”

Symposium book continued from page 1

AFS symposium and contained in the recently published book indicated that the spill caused persistent damage to the populations of various species of fish, birds, and marine mammals in Prince William Sound. In contrast, the 25 papers presented at the ASTM symposium during April 1993 and published by ASTM late last year suggested that Prince William Sound had essentially recovered from the spill by the end of 1992. During the ASTM symposium, Exxon researchers also claimed that some of the trustee’s reported findings in their papers of lasting damage from the spill were based on faulty scientific methods.

In the introduction to the new book on the trustee-sponsored research, the book’s editors—Robert Spies of Applied Marine Sciences in Livermore, California, Stanley Rice and Bruce Wright of the National Marine Fisheries Service (NMFS), and Douglas Wolfe of the National Oceanic and Atmospheric Administration—noted that “injuries from the Exxon Valdez oil spill accrued from a variety of direct, indirect, and delayed exposures that ranged from acute to chronic and varied widely among resources.” According to the book’s editors, the recovery of the various species injured by the Exxon Valdez oil spill has been “resource-specific,” varying with the magnitude and persistence of the spill’s direct and indirect impacts on each species and with each species’ internal population dynamics. “Continued study of the injured resources is required if we are to better understand the full extent of the spill’s impacts, how they occurred, and the nature of recovery,” the editors wrote.

With respect to the Exxon Valdez spill’s immediate impacts, Spies, Rice, Wright, and Wolfe estimated that the spill resulted “at a minimum in the direct mortality of 3,500 to 5,500 sea otters, 300 harbor seals, and 250,000 or more birds of 90 species.” The spill also caused “significant reductions in the populations of many intertidal organisms, including algae, barnacles, limpets, amphipods, isopods, worms, and fishes, over a very extensive area from Prince William Sound to the Kodiak archipelago and the Alaska peninsula,” according to

the book's editors. In addition, the editors noted that the spill caused "significant reductions in the populations of subtidal organisms in Prince William Sound" and increased the mortality of both Pacific herring eggs and pink salmon eggs during the first three years after the incident.

"Because of the rush to get verbal and summary information to the public at the February 1993 symposium, most of the formal writing occurred after the conference," according to Byron Morris, chief of the NMFS office of oil spill damage in Juneau, Alaska. Morris, who wrote the book's preface, noted that, "since the symposium, much of the information contained in the proceedings has been refined or extended, and in some cases it is new." According to Morris, all of the papers presented in the book "received thorough peer review before they were accepted for publication; more than 100 reviewers contributed their time to this effort." For a copy of the 931-page book, entitled *Proceedings of the Exxon Valdez Oil Spill Symposium* (ISBN 0-913235-95-4), at a cost of \$35, contact: AFS, Fulfillment Department, P.O. Box 1020, Sewickley, PA 15143; Tel: 412-741-5700; Fax: 412-741-0609.

News in Brief

- **Chinese company agrees to pay \$300,000 for spill in Washington's Columbia River.**

Shanghai Hai Xing Shipping Ltd. recently agreed to pay a total of \$300,000 to the Washington State Department of Ecology (DOE) to cover all penalties, environmental damages, and response costs arising from a January 1994 spill involving the company's grain carrier An Ping 6 on the Columbia River near Longview, Washington (OPB, 11 Feb 1994, p.1). The An Ping 6 spilled about 800 to 1,500 gallons of heavy fuel oil into the Columbia River on 10 January 1994, when its crew accidentally overfilled one of the vessel's fuel tanks. The spilled fuel contaminated more than 5 miles of the Columbia River's banks and injured several species of fish and wildlife. DOE has been attempting to receive payment from Shanghai Hai Xing Shipping for spill-related penalties, damages, and response costs since July 1994, but the company has refused to pay DOE, filing appeals first with the Washington Pollution Control Hearings Board and then with the Thurston County Superior Court. The Hearings Board rejected Shanghai Hai Xing Shipping's first appeal last year (OPB, 8 Sept. 1995, p.8), and the company and DOE reached their recent agreement before the Thurston County Court heard the company's second appeal. Commenting on the settlement, DOE Director Mary Riveland noted that her agency had a strong case and was prepared to go to court. "When a spill occurs in our state, we expect the responsible party to cooperate with officials to get sensitive, polluted areas cleaned up as fast as possible," Riveland explained. "Here, the company and their local representatives were uncooperative in cleaning up the spill and dragged out the appeals and negotiations," according to Riveland. "In cases like this, we stand our ground until the polluter is held accountable," Riveland added.

- **USCG rethinks under-keel clearance requirements for non-double-hull tank vessels.**

In response to pressure from the maritime industry, USCG has reopened the public comment period on the agency's recently issued under-keel clearance requirements for non-double-hull tank vessels and has suspended indefinitely the date by which vessel owners must begin complying with the requirements, which were originally scheduled to take effect on 27 November. USCG issued the requirements during July as part of a final rule specifying operational measures to reduce the frequency and magnitude of oil spills from non-double-hull tank vessels until their mandatory retirement from service in U.S. waters (OPB, 9 Aug. 1996, p.1). Under the final rule, the master of any non-double-hull tank vessel exceeding 5,000 GT would have been required to calculate the vessel's anticipated under-keel clearance prior to calling at any U.S. port, notify the vessel's owner of the anticipated clearance, and then receive the owner's approval for the voyage. Alternatively, the rule also would have allowed vessel owners to issue port-specific guidance to their vessel masters regarding the safe under-keel clearances for all U.S. ports. The International Association of Independent Tanker Owners, the Baltic and International Maritime Council, the Liberian Shipowners Council and other maritime industry groups strongly objected to the under-keel clearance rule's owner notification and approval requirement, arguing that the requirement would impose an undue burden on vessel owners. These groups also claimed that an owner's involvement in the determination of safe under-keel clearances might limit the legal liability defenses available to that owner following a grounding or spill. USCG will accept comments on the under-keel clearance requirements until 27 January 1997. For further information, see pages 60189 to 60190 of Vol. 61, No. 230 of

Trust awards grant to SeaLife Center

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By the Alaska Journal of Commerce

The M.J. Murdock Charitable Trust has awarded the Alaska SeaLife Center a \$500,000 grant toward its capital fundraising campaign.

The trust is one of the Pacific Northwest's leading philanthropic institutions, and the grant is the second major contribution from such an organization within two months.

In September, the center received a \$750,000 matching grant from The Kresge Foundation.

"The support of the Murdock Charitable Trust confirms the value and the need for a facility such as the Alaska SeaLife Center to promote stewardship of our Alaska natural resources through education and public awareness," said center Executive Director John Hendricks.

The \$50.5 million SeaLife Center is a marine research, wildlife rehabilitation and public-education facility under construction in Seward, set to open in 1998.

To date, the center has received corporate and individual gifts totaling more than \$3 million toward a goal of \$12 million, with a third of that amount from local residents and businesses.



KENAI PENINSULA REPORT

Seward SeaLife Center leads way in building projects

By Nancy Nyback
Alaska Journal of Commerce

One of the state's largest construction projects—the Seward SeaLife Center—leads the list of current facilities in the works on the Kenai Peninsula.

Other projects include the new West Homer Elementary School, upgrades to area schools and a senior center at Anchor Point.

New home construction also has kept contractors busy from Kenai to Homer.

"Residential construction has been extremely busy," said Jerry Hobart, chief appraiser for the Kenai Peninsula Borough.

Soldotna residential building looks more active than in past years, he said.

In Kenai, residential permits totaled \$4.1 million including 28 new homes and 28 remodeling projects or additions, according to figures from the appraiser's office.

Soldotna recorded the next highest figure for home building, totaling \$3.7 million. Thirty-six new homes were under construction this year and 12 remodeling projects were listed.

Homer logged the most residential projects at \$2.8 million, including 62 permits for new

homes and remodeling projects. Home and business building in Homer ranks about average compared to previous years, Hobart said.

Thirty-three new homes and other residential remodeling projects were under way in Seward this year, totaling \$1.2 million.

New home building and remodels reached \$8 million this year in the rural unincorporated areas of the Peninsula.

Commercial construction work in Seward tallies \$52.5 million, including \$50 million for the SeaLife Center. Work on a shellfish hatchery also accounts for a boost in Seward construction.

Contractors in Soldotna also have been busy with seven new and six remodeling commercial projects this year for \$2.4 million. However, work on new 7-Eleven stores and a Mapco store this year couldn't bring construction up to levels of several years ago when new department stores were built, Hobart said.

Kenai commercial work totaled \$1.6 million with permits for seven new facilities and 10 remodels.

Commercial projects in Homer reached \$1 million in 1996 for 11 new and remodeling projects.

Commercial work in rural unincorporated

areas totaled \$2 million.

The estimated \$11.7 million West Homer Elementary School should be completed this month and could open by next year, said Bonnie Golden, assistant to the Kenai Peninsula Borough mayor.

The contractor is G&S Construction of Soldotna.

Also, last year the Kenai Assembly approved a two-year \$1.8 million program to upgrade area schools with handicapped access and roof work, Golden said.

Construction has begun on the new \$350,000 center for Anchor Point Senior Citi-

zens Inc. The Kenai Peninsula Borough and the seniors corporation received a \$200,000 federal grant, she said. Borough officials will provide oversight for the grant, Golden said. Calm Enterprises of Homer is the construction contractor for the project.

Borough officials were busy in November conducting inspections after a fire at Ninilchik School, said Ken Campbell, public works administrative assistant.

A decision on whether to build a new school or renovate other space could take place in spring, he said.

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1994, requires the owners of passenger ships, bulk carriers, and tankers to develop and implement stringent safety and environmental protection policies for their vessels, including procedures for reporting accidents and responding to emergencies. "Nobody underestimates the scale of the practical challenge posed by the ISM Code," commented IACS Secretary James Bell. "But the international community will not accept any failure by the shipping industry to comply with the Code's requirements," Bell said. He noted that IACS's recent report was based on a database that the Association established earlier this year to track the progress of the world fleet in complying with the ISM Code (OPB, 18 Oct. 1996, p. 7). For further information, contact: James Bell, IACS, 5 Old Queen Street, London SW1H 9JA, United Kingdom; Tel: 44-171-976-0660; Fax: 44-171-976-0440.

● **U.K. DOT encourages tanker owners to install automatic ship-identification equipment.**

The U.K. DOT is urging the owners of tankers that trade in U.K. waters to equip their vessels with automatic radio transponders—devices that will allow Coastguard officials to track vessel movements off the U.K. coast more carefully and will thereby increase navigational safety in U.K. waters. Alandia Tankers, BP Shipping, Everard Shipping, P&O Tankships, and Shell International Trading and Shipping have already agreed to equip their vessels with the transponders, which automatically transmit a ship's identity to the Coastguard when "interrogated" by a radio signal. "Removing the anonymity of shipping is central to enhancing safe navigation and protecting our marine environment, so it is good to see that so many companies have already committed themselves to this initiative," according to U.K. Shipping Minister Lord Giles Goschen. "I hope that others will follow their example and become involved as soon as possible," Lord Goschen said. He noted that the U.K. government has urged the International Maritime Organization (IMO) to mandate that all merchant ships be fitted with transponders. Although IMO agrees that transponders are valuable tools for increasing navigational safety, the organization has not yet established a timetable for implementing transponder requirements. According to Goschen, the U.K. Coastguard has installed stations at several locations in northern Scotland to transmit the "interrogating" radio signals; these stations cover the Fair Isle Channel, the Pentland Firth, and the Minch. Goschen noted that the cost of installing a single transponder system ranges from about £1,000 to £2,500 per ship (£1.00 = \$1.64 U.S.).

● **Exxon Valdez Trustee Council completes purchase of lands from Tatitlek Corp.**

As part of its ongoing program to purchase and protect habitat for species injured by the 1989 Exxon Valdez oil spill, the Exxon Valdez Oil Spill Trustee Council recently reached an agreement with the Tatitlek Alaskan Native Corp. to purchase or secure conservation easements on 66,000 acres of Tatitlek-owned territory in the eastern part of Prince William Sound, Alaska. In exchange for the purchased lands and the easements, Tatitlek Corp. will receive \$23 million of the \$900 million that Exxon Corp. agreed to pay to the U.S. government and the State of Alaska to settle civil claims arising from the Exxon Valdez spill; the civil settlement monies are administered by the Trustee Council. Tatitlek Corp. will also receive \$10 million of the \$50 million that Exxon paid to the U.S. government to avoid facing criminal charges in connection with the spill. The lands purchased and protected under the agreement are "some of the most valuable parcels in Prince William Sound" and include habitat for harlequin ducks, bald eagles, black oyster catchers, marbled murrelets, pigeon guillemots, harbor seals, sea otters, and other species affected by the Exxon Valdez spill, according to the Trustee Council. A portion of the lands covered by the agreement will be managed as part of the Chugach National Forest, and the remaining lands will be administered by the State of Alaska, the Council said. The Tatitlek lands are part of about 800,000 acres of fish and wildlife habitat in south central Alaska that the Trustee Council is planning to acquire or protect under its habitat protection program; the Council has allocated about \$381 million of the \$900-million civil settlement for that program. To date, the trustees have already acquired or protected more than 500,000 acres of their 800,000-acre goal.

● **FWS proposes restoration plan for resources injured by 1993 pipeline spill in Indiana.**

The U.S. Fish and Wildlife Service (FWS) recently issued a draft plan that will be used by federal and state trustee agencies to restore the endangered mussel species and other natural resources injured by a 1993 fuel spill from a pipeline in Dekalb County, Indiana. The eight-inch pipeline, which is operated by NORCO Pipeline Inc., ruptured on 15 September 1993 and spilled approximately 30,000 gallons of No. 2 diesel fuel into an agricultural field near County Road 18 in Dekalb County. The spilled diesel fuel flowed through a drainage ditch into Fish Creek, which carried the oil downstream into Williams County, Ohio. The spill ultimately polluted

Holland America donates to SeaLife Center

Holland America Line Westours Inc. last week announced a \$200,000 gift to the Alaska SeaLife Center in Seward.

Al Parrish, vice president of Holland America, said the SeaLife Center "will be an important addition to the state's tourism infrastructure and will have a long-term impact on marine ecosystem research, rehabilitation and public education."

Holland America will contribute \$40,000 a year for the next five years, the company said. The University of Alaska Fairbanks is to administer the contributions.

The nonprofit Seward Association for the Advancement of Marine Science, which is to operate the facility, hopes to raise \$12 million in private funds to enhance the facility and create a research endowment. The city of Seward is to own the \$50.5 million facility, which is slated to open in May 1998.

RECEIVED
FEB 10 1997**Marine life center gets grant**

SEWARD — A marine life center here has received a \$200,000 grant from tour company Holland America, whose passenger ships call at the Resurrection Bay port. Holland America said Wednesday it would give \$40,000 a year for five years, with the money administered by the University of Alaska Fairbanks. The center, set to open next year, will occupy seven acres of Seward waterfront.

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

SeaLife Center names new director

SEWARD (AP)—The Alaska SeaLife Center here has reached into the visitor industry for its marketing chief.

Thomas Honan, who most recently served as director of marketing for Holland America Line Westours in Seattle, will help promote the center. His salary was not disclosed.

"The Alaska SeaLife Center

will create an excellent opportunity to showcase the teeming wildlife of Resurrection Bay and the Gulf of Alaska," Honan said in a prepared statement. "The possibilities for marketing the Seward center as a visitor destination will extend beyond the traditional Alaska visitor to the scientific and educational communities as well."

The \$50.5 million center is a marine research, rehabilitation and education facility under construction along the Seward waterfront.

The cold water research facility, scheduled to open in May of 1988, will provide opportunities for visitors to see and learn about marine mammals, sea birds and fish.

Biologists use Native hunters to study seal populations

By MARK BUCKLEY
Mirror Writer

In their quest for more information on Alaska's harbor seal populations, a multi-agency group of marine mammal biologists have recruited a team of Native hunters to collect scientific samples.

"This is pretty exciting for researchers because we'll get fresh samples coming in from all over the state," says Kate Wynne, a marine mammal specialist with the University of Alaska's Marine Advisory Program. "That way, we can compare data collected across a broad geographic range."

Wynne, whose office is at the Fish Tech Center, on Near Island, says the recently-inaugurated Kodiak program follows similar hunter/sampler arrangements operating elsewhere in Alaska.

"There are programs like this already in place in Southeast Alaska, Prince William Sound, Bristol Bay and the Aleutians. So far, about 100 harbor seal samples have been collected."

Wynne says the samples are valuable because of the shaky status of Alaska's harbor seal population.

"Harbor seal numbers are declining, and we're trying to find out why. It doesn't make sense for members of the scientific com-



Mark Buckley Photo

John Boone, a Native hunter and sampler from Valdez and marine mammal biologist Kate Wynne watch as Melissa Berns, a Kodiak High student who is from Old Harbor, determines the sex of a harbor seal.

munity to collect seals for study when Native hunters are already harvesting them," she explains.

To that end, Wynne has recruited two Kodiak villagers.

"The hunter/samplers from Kodiak Island villages are Jeff Peterson, from Old Harbor, and Mitch Simeonoff, from Akhiok," Wynne says.

"The Kodiak Island hunter/samplers will collect scientific data and then pass the data and some tissue samples on to me," Wynne says.

"In other places, the samples and data go to Alaska Dept. of Fish and Game offices in Anchorage and Juneau. The National Marine Fisheries Service is also involved. The agencies will work together to establish a statewide standard and data base.

"Locally, our goal is to get ten samples per year each from Old Harbor and Akhiok," she adds.

At a recent training session, Wynne demonstrated the sampling technique to Peterson, Simeonoff, John Boone, a hunter/sampler from Valdez, and a group of Native high school students.

Using the carcass of a harbor seal, Wynne leads her class through the procedure.

"We start out determining the sex of the animal," she says. "If it was a female, we want to know whether she was pregnant or lac-

tating. If there was a fetus, we'd like to know whether it was collected, too."

Next, Wynne demonstrates how to take body measurements, which include blubber thickness, and then shows how to weigh the animal.

Dissecting the seal is the next step. As Wynne does this, she names organs and identifies body parts. She shows her class which parts of the animal, such as heart, liver or kidney; she wants them to collect tissue from. Then she demonstrates how to bag and label the tissue samples.

"Each sampler gets a kit, containing plastic bags, knives, scales, labels, pens and pencils," Wynne says. "Also included are forms on which to record the data."

"Along with collecting data about the animals, the hunters will make note of the location and date of the harvest," Wynne adds.

"We plan to get freezers out to each of the villages," Wynne says. "That way, the samplers can hold the tissue samples until there are enough to justify sending them to town."

Referring to the hunters' life-long experience as naturalists, Wynne points out they do not need an extensive training. "They're already biologists," she says. "they just need to be shown how to fill out the forms."

WILSHIRE

AMERICAN FISHERIES SOCIETY

VOLUME 11

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Two rockfishes of increasingly rare and endangered fish
species are the focus of the 2000 symposium



FISH BITES

At the recommendation of the Right Whale Recovery Team, and in response to a petition from GreenWorld, Inc., the National Marine Fisheries Service (NMFS) has proposed a ban on most approaches within 500 yards of a northern right whale, the world's most endangered large-whale species. The proposal also would prohibit head-on approaches to such a whale once one has been sighted, prohibit positioning a vessel in its path, and require avoidance measures. An estimated 300 northern right whales remain in the northwest Atlantic Ocean. A new Large Whale Take Reduction Team met in mid-September to tackle the problem.

Iowa Department of Natural Resources biologists Gary Siegwarth and John Pitlo have documented one of the first recorded cases of Mississippi River paddlefish migrating up a tributary river to spawn. "This finding illustrates the vital role of interior rivers to Mississippi River fish populations," said Siegwarth. "It also indicates that in the days before the dams, tributary rivers served as significant 'highways' for fish populations moving to important seasonal habitat."

The 23 August issue of Science reported that a bacterium (*Streptococcus iniae*) causing human meningitis has been transmitted from tilapia to humans, probably through injuries received by people while cleaning fish. Six Ontario residents have been affected.

Maryland biologists have announced that the state's annual summer survey of juvenile striped bass (*Morone saxatilis*) populations in the Chesapeake Bay showed abundance exceeding the previous 1993 record by 52% and the largest in 43 years of study.

In September, a single PIT-tagged wild female sockeye salmon (*Oncorhynchus nerka*), probably an outmigrant from 1994, was caught in the Redfish Lake fish trap in the Snake River, Idaho, drainage. Five more adult sockeye were counted passing Lower Granite Dam migrating upstream, according to Paul Kline, senior fisheries research biologist. That same month

Idaho Department of Fish and Game biologists released 120 adult sockeye salmon—all offspring of eight wild sockeye adults that returned to spawn in 1993 and were reared in hatcheries—into Redfish Lake to spawn naturally.

Public hearings have been underway regarding a Gulf of Mexico Fishery Management Council recommendation to require bycatch reduction devices on all shrimp trawls other than small test nets in federal waters less than 100 fathoms deep in the Gulf of Mexico.

In September delegates from 15 nations met for the fourth time to conclude negotiations regarding an Inter-American Convention of the Conservation and Protection of Sea Turtles. The treaty promotes sea turtle recovery and habitat protection by requiring turtle excluder devices in shrimp fisheries, encouraging scientific research, and reducing bycatch of sea turtles in other fisheries.

For the first time, the National Marine Fisheries Service and the International Commission for the Conservation of Atlantic Tunas (ICCAT) are holding regional meetings to gather public views on international issues surrounding highly migratory fishes such as tuna, swordfish, and billfish. The information will be used by U.S. ICCAT commissioners to shape priorities before meeting with 23 other countries in Spain in November to discuss the latest stock assessments for highly migratory fish and to negotiate country-specific fishing quotas.

Alaska residents will not be able to vote in November on a general election ballot initiative called Fairness in Salmon Harvest (FISH) because it would take away the ability of state fisheries managers to allocate salmon among competing user groups, according to the Alaska Supreme Court. The court declared the initiative unconstitutional, reversing an April Superior Court ruling that held the initiative was constitutional.

In an effort to protect salmon and cutthroat trout habitat as well as the subsistence fishing tradition of the Tatitlek Native village corporation, Vice President Al Gore helped

negotiate a \$33-million agreement to protect 64,000 acres of privately owned forest in eastern Prince William Sound, Alaska. The agreement was funded by the Exxon Valdez oil spill settlement.

Alaska Department of Fish and Game biologists have reported that the Yukon River fall chum salmon (*Oncorhynchus keta*) run seems to be almost 200,000 fish larger than anticipated and that all escapement obligations to Canada have been met.

An international interagency partnership of biologists is working to bring back Lake Superior's severely depleted coaster brook trout (*Salvelinus fontinalis*) populations. The species, considered to be evolutionarily significant, has few surviving populations; restoration efforts include genetics studies, an experimental reintroduction, and studies of the movement and habitat use of radio-tagged coasters. For information call Lee Newman, 715/682-6185.

No evidence exists to support claims by opponents of the Endangered Species Act that the act, particularly the Northern spotted owl issue, has had "devastating" economic effects on the timber industry and private property owners, according to a report by Massachusetts Institute of Technology. The report, "The Impact of Endangered Species Listings on Home Building and the Real Estate Industry," concluded that other factors are responsible for the increase in timber costs in the past 10 years.

The Australian Institute of Marine Science is organizing a Global Coral Reef Monitoring Network to monitor conditions of coral reefs worldwide. The network will begin operation by early 1997 and will target existing and planned coral reef marine protected areas as main monitoring sites. For information contact Clive Wilkinson, AIMS, PMB No. 3, Townsville MC 4810, Australia; c.wilkinson@aims.gov.au.

The Wisconsin Natural Resources Board voted to close its Lake Michigan waters to commercial yellow perch fishing this year after scientists found few juvenile perch in gillnet surveys.

SCIENCE VERSUS
ENVIRONMENTAL ADVOCACY

The recent article by John A. Wiens, "Oil, Seabirds, and Science" (*BioScience* 46: 586-597), merits attention. Even if we accept Wiens' minimalist estimates of the amount of lasting damage to seabirds that resulted from the *Exxon Valdez* spill and all of his accusations of insupportable claims by some of the publicly funded scientists who studied the event and by environmental spokesmen (and in the absence of direct personal knowledge, I assume that his statements are substantially correct), serious questions remain.

The focus of Wiens' article is the conflict between science and environmental advocacy. He fails to mention the possibility of conflict between science and corporate advocacy. We know from numerous examples, of which the tobacco controversy is only the most visible, that this conflict is real and pervasive. Yet it seems never to have come to Wiens' attention.

From comments in his article, it appears that Wiens was funded by Exxon and was required to withhold his data from publication or public discussion because of pending litigation. Confidentiality clauses are not unusual. Scientists who consult for commercial concerns are typically bound to treat information concerning ongoing applied research as proprietary and confidential—a requirement that is entirely proper. But

Wiens' position was different. He was not participating in appropriately proprietary research and development activities, but collecting data on a real-world situation in which his client had, along with other consequences, caused the deaths of many thousands of seabirds. The only reason for the imposition of secrecy on his project was that Exxon intended to make selective use of his findings in litigation in an attempt to limit their legal responsibility for those consequences and to prevent their use by attorneys for the other side.

Wiens accepted funding in return for providing data to Exxon's lawyers—professional advocates—for their selective use. Of course trial lawyers use material selectively; in the adversarial US court system, that is their job. The role of a scientist, Wiens says, is to identify scientifically supportable statements (he does not comment on whether this duty extends to data suppressed by his client) and to point out instances of selective use of data in the pursuit of advocacy.

In view of his personal experience and his expressed concern for the integrity of science, Wiens was in a unique position to discuss the ethical ambiguities faced by a scientist who contracts to provide data to advocates for selective use. It is disappointing that he did not do so, but in 11 pages devoted to discussion of the conflict between science and advocacy chose to discuss only the advocacy of environmentalists.

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Letters to *BioScience* should be addressed to Editor, *BioScience*, 1444 Eye St., NW, Suite 200, Washington, DC 20005. The editorial staff reserves the right to edit letters for length or clarity without notifying the authors. Letters are published as space becomes available.

No Wild,



PHOTO: TOM & PAT LEESON

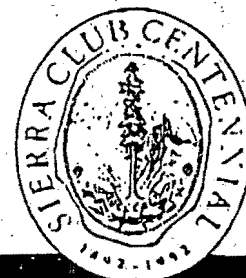
No
Wildlife.

Life in the wild can be pretty tough these days. Without the necessary ancient-forest habitat to live in, some species like the northern spotted owl of the Pacific Northwest are severely threatened.

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NATURAL AND SOCIAL SCALES IN ECOSYSTEM MANAGEMENT*

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FEB 10 1997
ADMINISTRATIVE RECORD

Kai N. Lee[§]

EXXON VALDEZ OIL SPILL
TRUSTEE COUNCIL
ADMINISTRATIVE RECORD

I'm delighted to visit Alaska at a time of year when none of my colleagues will accuse me of playing rather than working. I'm pleased to be invited to this gathering which Exxon has funded with such reluctant generosity.

[ecosys mgt = realignment]

I'd like to put a simple hypothesis before you: ecosystem management is an attempt to realign the scales of human activities so that they become compatible with the scales and rhythms of ecosystems valuable to humans. I'd like to consider this hypothesis by exploring three ideas — learning, scales, and communities.

Your work deals with two kinds of communities — ecological and human. You engage with human communities mainly through archaeology and public participation. I suggest that that isn't enough. (The trustee council's logo, like the research most of you do, focuses only on the *non*-human elements of the ecosystem.) A striking feature of the trustee council's work is that the large stream of resources it administers will mostly come to an end, for practical purposes, in the foreseeable future. But the burden of responsibility will not end. Rather, stewardship will

* Keynote Lecture, annual restoration workshop, *Exxon Valdez* Oil Spill Trustee Council, Anchorage, Alaska, January 24, 1997. I am grateful to Stan Senner and Molly McCammon for their hospitality and good sense. Many of these ideas were developed while I served on the Committee on Protection and Management of Pacific Northwest Anadromous Salmonids, National Research Council. I am indebted to Courtland L. Smith, Bonnie McCay, Peter A. Bisson, and David Policansky for helpful conversations and criticism during our work on that committee. John Volkman's salutary influence is also apparent in this essay. Criticisms and comments welcome, at the address below.

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return to the humans of Prince William Sound — the folks who did that job, largely unassisted, until March 24, 1989. I shall return at the end of my talk to this point: that the transition from today's trustee council to a sustainable management for the indefinite future is a task that you should begin now to design.

"Ecosystem management" is a label for a set of controversial purposes — the notion that humans should take responsibility for whole habitats, even when they cross property lines and governmental jurisdictions, even when taking responsibility forces people to acknowledge their own destructive effects upon the natural world, even when taking responsibility means that we must address conflicts that make all disputing parties uncomfortable. Ecosystem management is not a simple thing to strive to do; the alternative — to abandon our responsibilities to natural habitats — may often be easier.

I have found the idea of scale helpful in organizing the difficulties of ecosystem management. I'd like to begin by saying what I mean by that word, since I mean something similar to what ecologists mean, but not exactly the same. Second, I'd like to illustrate the problems that ecosystem management encounters as a social activity, and finish with some comments about the historical process of redefining stewardship after a major social transition like the one triggered by the oil spill.

Let me say that the questions about ecosystem management raised in my talk are not arguments *against* an ecosystem approach. Rather, my purpose is to improve the probability of success in the difficult challenge of seeking to manage at the ecosystem scale by sharing experience and potential lessons.

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Scale mismatches

Environmental problems result from mismatches between the scale of human utilization of natural resources and ecosystem function. These mismatches occur in three dimensions. (Lee 1993b)

[scale mismatches]

In his famous paper on the tragedy of the commons, Garrett Hardin (1968; cf. McCay and Acheson 1987) observed that overuse of common-pool resources reflects institutional failure. If no single person or organization owns a resource to which all have access, then no exploiter of that resource has reason to conserve. That which belongs to all is cared for by none.

SCALE MISMATCH	CHARACTERISTIC PROBLEM
Spatial	Pollution, e.g., release of combustion products into air.
Functional	Deadlock, e.g., misallocation of water.
Temporal	Unsustainable harvest, e.g., catch in excess of reproduction rates.

Human responsibilities often do not match natural scales.

This table generalizes that argument: when human responsibility does not match the spatial, temporal, or functional scale of natural phenomena, unsustainable use of resources is likely, and it will persist until the mismatch of scales is cured. Because the natural world is rich in patches, unsustainable use can continue for long enough for humans to assume it can be permanent, as in the case of our institutionalized dependence on fossil fuels. The risk that became reality in March 1989 is one consequence of that dependence. Yet the recipe for reform implicit in this analysis — to get the scales right — is made considerably harder by the

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fact that our knowledge of natural processes is limited. (National Research Council 1995)

Hardin's parable of the pasture depicts a spatial mismatch. Shepherds own their animals but not the land that nourishes them. It is accordingly rational for individuals to overexploit the range, reaping a positive return until the land is ruined. Similarly, pollution is the dumping of waste products into air, land, or water because the dumper has no responsibility to care for these commons to which there is unrestrained access.

Pollution has been restrained by a variety of social controls. Your work here is the enactment of one of them — the idea that pollution can be restrained by having those guilty of pollution pay to compensate those who have suffered from it.

A second form of mismatch is functional. Because the natural world is complex, human activities in it are specialized. These specialized activities generally owe much to tradition and precedent and little to science or efficiency. An example is the allocation of water. A doctrine called "prior appropriation" runs through western water law: it says that the water user with the older claim on water diverted from a stream must be fully satisfied before a more-junior user may receive any water (see Wilkinson 1989).

Prior appropriation made sense under conditions in which water was the key to farming and the stability of agricultural settlement was highly valued by an expanding, colonizing society. Today, virtually all agriculture is maintained, regulated, and manipulated by policy and subsidies. Western water law has become an anachronism, providing

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incentives to waste water so that one's claims will be preserved in future years. That waste deprives watercourses of their natural flow because water in a streambed has no legal claim — it is a commons, to be overexploited.

The critique that functional responsibilities are drawn too narrowly leads naturally toward comprehensive control. Yet Big Government has toppled in once-socialist states and retreats in nominally capitalist ones. Comprehensive control is neither politically feasible nor believed to be workable even if it could be established. How to manage the problems of functional mismatch in protecting environmental quality over time remains an open question.

Third, consider temporal mismatches, especially the overexploitation of living populations: harvesting at rates that cannot be sustained because inadequate time is permitted to regrow the populations that are depleted. A student writing about forestry put it this way: trees may grow faster in bank accounts than they do in the woods. Harvesting populations at unsustainable speed — mining the resource — can be rational if the earnings from harvest produce financial assets whose value appreciates more rapidly than the resource would regenerate.

Deliberate social strategies for restraining the mismatch between biological time and human time remain underdeveloped, and notions of property in industrialized nations have not often put high value on stewardship, the idea that present generations owe their descendants something beyond goods that can be reduced to financial measurements.

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Illustrations from the salmon ecosystem

What I've said about scale is abstract. Let me illustrate some concrete scale mismatches by discussing the Columbia River salmon ecosystem (see National Research Council-1995) not far south of here. It's a situation that is importantly different from the one you face here — a point to which I'll return in a few minutes.

[slide: France]

The Columbia basin has a land area roughly the size of France. It's roughly twice the size of the oil spill affected area.

[slide: salmon]

The Columbia and other rivers draining into the North Pacific have been colonized by seven species of anadromous salmonids, genus *Oncorhynchus*, the fish that displays a hook-nosed appearance when it enters the freshwater breeding phase of its life-cycle.

[slide: Indians fishing]

Salmon in the Northwest were so plentiful that the first people to inhabit this landscape did not practice agriculture. Their harvests swam in each year, worshipped but not cultivated, in runs that ranged to more than 10 million fish in a single year.

[slide: fishing boat]

Columbia River fish, now caught largely in the open ocean, remain highly prized, even though their numbers have dwindled sharply, and many stocks originating in the upper river basin are now so depleted that they verge on extinction.

The lifecycle of salmon, with migrations as long as 10,000 miles, is a great drama of natural history. The salmon lifecycle is immense in spatial

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scale, diverse in the habitats sampled by the fish, and exacting in what it requires in those habitats. Salmon survive only in high-quality environments. Their decline is, accordingly, a classic example of the canary in the mineshaft. If salmon aren't doing well, then many other life forms may follow.

[slide: McNary dam]

Humans have modified the salmon habitat drastically over the past 120 years. The most visible manifestation is the building of dozens of multiple-purpose dams on the major rivers of the Northwest.

[slide: transmission lines]

These dams generate electric power from falling water — in the Columbia basin alone, roughly enough to supply the needs of New York City.

[slide: aluminum pour]

That electricity, in turn, has made possible energy-intensive industries like aluminum refining.

[slide: irrigation sprinklers]

The dams were built in the 1930s to provide irrigation for a depressed agricultural society in the semi-arid lands of the inland Northwest. Today, potatoes, apples, cherries, and other crops contribute to the prosperity of that land.

[slide: barge]

And the crops are brought to market, in many cases, by low-cost water transportation that relies on navigation locks in the dams.

[slide: Portland]

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What most people see of the Northwest are its national parks and cities, like Portland. Here too, low-cost electricity from hydropower has become a vital, if often unnoticed component of a comfortable existence.

[slide: Vernita Bar]

By the 1970s, when the Columbia's network of dams was completed, there was only one stretch of the river's main stem where salmon spawned on their own, here at a lonely spot in eastern Washington called Vernita Bar. The annual salmon runs, more than 10 million in aboriginal times, had dwindled to two to three million, and more than two-thirds of the remaining salmon population began its lives in hatcheries.

The salmon's decline is a monument to mismatch:

- In spatial terms, the migrations of salmon from the Columbia to the Gulf of Alaska have led different groups of fish harvesters to compete with one another for the dwindling catch. Before 1985 there was not even an institutional framework for overall assessment of the stocks during the harvest season. It was impossible to tell who caught which portions of the run until the season had ended. The work you've done in otolith marking and other means of identifying fish in mixed-stock fisheries lays the technical basis for advances in management.
- In functional terms, salmon have been only one claimant among many to the bounty of the river. Their voice has not been influential until very recently, and it's never been commanding. Migrating fish evolved in the presence of large springtime flows, as snow melted from the mountainous interior. Juveniles were carried to sea by the spring freshet, often covering hundreds of miles in several days' time. Now, the water is held back in storage dams, because the value of electricity is highest in the winter, when people need heat, not in the spring, when there's already a lot of water running and not so much demand for power. The spring migrants now spend weeks rather than days getting to salt water. Along the way they are exposed to predators in the slackwater reservoirs and the rigors of passing the dams. Amazingly, a lot make it through each dam; but the cumulative mortality of a series of dams is high enough to depress the abundance of upriver stocks dangerously.

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- And in temporal terms, the large-scale modifications of the past century have yet to be taken into account. The rivers have been impounded, the forests cleared, and the landscape transformed — yet there has been little understanding that salmon habitat has been drastically altered. Harvesters and fishery managers did not foresee the vulnerability of large populations sustained by hatcheries. And human actions have tended to assume that the abundance of the past would be readily restored, even as the environmental capital needed to regain productivity was being destroyed or altered beyond biological recognition (Larkin 1979).

[slides off]

The story of the Columbia is one with many parallels. The Columbia demonstrates clearly the profound impact of human scales of action that do not match ecological requirements. What's different about the salmon is that people care a lot about its decline, but the way salmon declined is a dynamic repeated often in other places.

Yet it's important to bear in mind a major difference between damage to the salmon ecosystem and the damage done by the *Exxon Valdez* spill. The salmon is the victim of routine, profitable activities — dams, irrigation, cities. These activities yield a steady stream of revenues, part of which has been diverted to salvaging the salmon ecosystem, so far with little to show for it.

The oil spill was not a routine event; it is, in fact, the opposite, producing a one-time disturbance and a one-time settlement agreement. The challenge you face is to fashion a meaningful restoration from that settlement — a task in which nature has been your ally already, in which the people of coastal Alaska can be too, I think. The challenge in the Pacific Northwest salmon ecosystem is to achieve a sustainable fishery in the permanently altered world of the industrialized Columbia; it isn't clear whether nature will permit that, and it is certainly unclear whether the

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human institutions that manage parts of the salmon ecosystem are willing to make, or even find, the necessary accommodations.

Ecosystem management

In response to the dwindling of salmon and other valued species, the idea has gradually grown that species are not the right unit of conservation. For if we want to take advantage of the quality and productivity of valuable species, then we must protect and manage their ecosystems, rather than attempt to supersede or to substitute for those ecosystems by artificial culturing methods like hatcheries. Phil Janik quoted the new chief of the Forest Service, Mike Dombeck, to that effect just yesterday. It is the logic that propelled the Sound Ecosystem Assessment into being, as Ted Cooney said yesterday; it is a hope that hangs in the mist over the Everglades, the Grand Canyon, and even the Columbia.

A Forest Service framework...

There is no single method of ecosystem management. Let me, for the sake of clarity, pick a thoughtful example put forward by two analysts at the U.S. Forest Service.

[ecosystem management defn]

- Landscape ecology should be the conceptual template...
- Informed by systematic data collection and interpretation,
using ecological mapping units.
- Landscapes are heterogeneous and controlled by disturbance regimes operating through time.
- Ecological integrity is maintained by sustaining or restoring pre-settlement landscapes.

Ecosystem Management (after Jensen and Bourgeon , USDA 1994)

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These principles should be familiar to you.

...operating in a historical context

Consider, then, how they contrast with the historical assumptions that shape land use.

[ecosystem management vs. human priorities]

In place of landscape ecology, humans have emphasized sovereignty and property.

In place of systematic data collection, humans have relied upon the knowledge of owners: an understanding of land and water that is shaped by and often limited to past uses, instead of the ecological character of the land and sea. Owner's knowledge is rooted in place — in place-dependent economic activities like farming, on time scales organized by human tenure, inheritance, and land speculation, and on spatial scales shaped by human mobility (Jackson 1970). Owner's knowledge is different from, sometimes a great deal more humane than the scientist's geographic information system or species lists. These differences underlie a good deal of mutual suspicion (e.g., Berry 1989). Consider how long it's taken the trustee council to give Traditional Ecological Knowledge a place on your agenda, and how even that place is labeled with an acronym that makes this kind of knowledge TEK ...but not high-TEK.

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ECOSYSTEM MANAGEMENT	HUMAN PRIORITIES IN UTILIZATION
Landscape ecology	Sovereignty & property
Systematic data collection & synoptic interpretation	Owner's knowledge
Ecological integrity in mapping units	Boundaries set by human use, institutions, & memories
Heterogeneity governed by disturbance regime	Homogeneity within use class; high productivity
Pre-industrial landscape as standard	Maximization of (long-term) utility
<i>biotic system</i> — independent of institutions	<i>historical</i> — bound by precedent & institutional tradition; individual- rational

Ecosystem Management vs. Human Priorities

The prevalence of owner's knowledge means, in turn, that humans divide and conceive of landscapes in particular ways. Here is a map, taken from a document discussing the Northern spotted owl. It shows the key watersheds to be managed because they lie within the geographic range of the owl.

[overhead: key watersheds]

Compare this map to another one, of the county governments in that same geographic area.

[overhead: counties]

You can see the qualitative difference. The ranges of biota are governed by precipitation and topography. Humans choose readily defensible borders, such as rivers, to mark jurisdiction and property. Or else we draw straight lines on the land.

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Rivers are of course the centers of drainages, not their edges, and the boundaries of plant or animal dispersal rarely fall along straight lines. Drawing straight lines upon the land is arbitrary. Relying on rivers as borders is critically inappropriate, separating human interests along lines where human concerns should be unitary or at least coherent.

[return to ecosys mgt vs. human priorities]

Instead of heterogeneous landscapes resulting from natural disturbance regimes, human control has traditionally aimed at homogeneity and, in the case of cultivated lands, at installing and maintaining ecosystems at early successional stages where productivity is high. That is, humans take pre-development landscapes as starting point for transformation, not a benchmark for conservation or restoration.

The contrast between ecosystem management and human exploitation as ways of looking at the land is a contrast between sets of assumptions. Ecosystem management takes as its organizing premise the communities of biota. But ecosystem management envisions a landscape shaped primarily by disturbances of non-human origin, over times that are long compared to human temporal horizons. In short, ecosystem management operates on different scales than nearly all types of human utilization. Such a perspective operates independent of institutional considerations, in sharp contrast to human ownership and transformations of land.

The harmonizing of human and natural scales called for in ecosystem management is accordingly difficult.

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Three responses

The rise of ecosystem management in U.S. policy coincided with the dwindling capacity of the federal government to govern. Interior Secretary Bruce Babbitt's frustrating career in that post is a graphic demonstration of both the importance of ecosystem management as an idea and the political difficulty of pursuing its governmental realization.

[three responses]

Instead of national policy, three rather different and somewhat complementary approaches have been tried as ways to harmonize human and natural. I want briefly to review these ideas — co-management, bioregionalism, and adaptive management — and explore how they might become part of a way to think about ecosystems inhabited and used by humans.

Each of these approaches responds to the two principal roots of environmental conflict in American politics. First, the management of public resources is shaped by the fragmentation of formal authority and political power. Authority is divided between federal and state governments and power is dispersed among a wide variety of business, citizen, media, and governmental organizations. Cooperative action requires compromise whenever there is conflict. Second, the economy is technically complex and environmental questions face uncertainties at every turn. Managing ecosystems — which are owned by private and public entities with conflicting agendas affecting one another and other neighboring and distant interests — requires recognizing conflict, stimulating negotiations, and providing technical analyses to illuminate disputes. Co-management, bioregionalism, and adaptive management each seek to do this, and each

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can be carried out with only the acquiescence of the federal government — they do not require large-scale funding.

Co-management

Let me begin with co-management. For most of the past century, public lands in the U.S. have been managed on a model of expert neutrality (Hays 1987). Agencies like the U.S. Forest Service have been charged with managing public lands in the public interest. But rising conflict has made it impossible to define the public interest non-controversially.

Bringing in those who are affected became an attractive alternative to increasingly embattled agencies. The result has been co-management: "power-sharing in the exercise of resource management between a government agency and a community or organization of stakeholders." (Pinkerton 1992, p. 331)

The idea of co-management is simple: get the contending interests together so they can work out something all can live with. Co-management recognizes the central role of equity and fairness in managing ecosystems that are owned by and affect people in diverse circumstances. Human communities can avoid a tragedy of the commons (Ostrom 1990); they do so by fostering monitoring of resource users and effective enforcement of those who violate the rules of equitable use. That is, managing ecosystems is a people issue. Co-management seeks to tackle that people problem head-on.

But this approach is not a cure-all. As the number of competing interests in a resource increases, the costs, procedural complications, and complex tradeoffs increase as well, often in apparent disproportion to the scope of involvement.

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Moreover, most cooperative arrangements have not been designed but are the residue of conflict and negotiation among opposed parties. Such a history often brings with it a range of problems — lowest-common denominator positions, blaming as a substitute for analysis, and emphasizing short-term remedies with anticipated early payoffs, such as salmon hatcheries. On the other hand, over time periods of a decade or more, as Pinkerton (1992) showed for state forest management, both the agenda of disputing and the institutions within which disputes are conducted can evolve toward durable accommodations. In sum, co-management is a tool; it can't do everything, but it can do some essential things.

Bioregional scope

Consider next management organized around bioregion. From an ecological perspective the most straightforward strategy of reform is to shift the margins of human control and responsibility to match natural boundaries. Indeed, the notion of ecosystem management is rooted in the claim that ecosystems are the best scale at which to manage. What I've learned here is that you have had the courage to define ecosystems so that they include both terrestrial and marine components; that's important and difficult and novel.

Let me emphasize "difficult." Straight-line boundaries like the eastern border of Alaska are in place. Trade routes have tied together different biogeographic provinces: highways, transmission lines for electricity, water diversions on land, shipping lanes at sea and in the sky. Along these human paths flow commercial transactions in which human values define the relative scarcity of specific resources, including the crops

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harvested from managed vegetation and animal populations. Any attempt to shift human jurisdictions so as to focus attention on the welfare of an ecosystem must begin with these boundaries and networks (Volkman and Lee 1988).

Even a more modest aim, to map reality in ecosystemic terms, runs afoul of human priorities. Much of what is needed to make maps and data bases that make sense ecologically would come from observations made on private lands. Gathering that information relies, in turn, on land-owners' perception that sharing data is in their interest. But the use of biological information for regulation undermines this perception. The result has been the strange struggle over the National Biological Survey, fueled by land-owners' fears of the Endangered Species Act. This battle is one measure of how far we remain from bioregional governance of ecosystems.

Adaptive learning

[back to Three Responses]

Let me turn now to the third of the responses to scale mismatch, adaptive management.

[AM defn]

Because human understanding of nature is imperfect, human interactions with nature should be experimental. *Adaptive* management applies the concept of experimentation to the design and implementation of natural-resource and environmental policies. (Holling 1978, Walters 1986, Lee 1993a, Gunderson, Holling & Light 1995) An adaptive policy is one that is designed from the outset to test clearly formulated hypotheses about the behavior of an ecosystem being changed by human use. If the policy succeeds, the hypothesis is affirmed. But if the policy fails, an adaptive

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design still permits learning, so that future decisions can proceed from a better base of understanding.

[cartoon]

Adaptive management makes sense when there is a lot of uncertainty, but the adaptive approach is not free: two problems are the costs of information gathering and the political risks of having clearly identified failures (Volkman and McConnaha 1993). An adaptive approach has been tried in practice in several arenas over the past 15 years. Recent studies (Halbert and Lee 1990, Walters, Goruk and Radford 1993, Hilborn and Winton 1993, Lee 1993, Volkman and McConnaha 1993) provide appraisals of the successes and limitations of the adaptive process.

[learning under adaptive mgt]

This body of experience has produced lessons about the practicability of adaptive management and the institutional conditions that affect the conditions under which experiments at the scale of ecosystems can be conducted.

- Learning takes a long time — decades to centuries. Patience, particularly in institutional settings such as government that work on much faster cycles, is both necessary and difficult.
- Systematic record-keeping and monitoring is essential if learning is to be possible. But collecting information is expensive and often hard to justify at the outset and during times of budget stringency because the benefits of learning are hard to estimate quantitatively.
- Experimentation within the context of resource use depends critically upon the collaboration of resource users.
- Adaptive management does not eliminate political conflict, but can affect its character in important, if indirect, ways.

[adaptive management cycle]

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Adaptive management looks like a planning cycle, but rarely conforms to that orderly image. Because it is experimental, adaptive management will encounter surprises *if it works* as intended.

[adaptive management cycle, with conflict]

Given the fragmented jurisdictions and conflicting claims that characterize all contested ecosystems, surprise and its companion, disappointment, spawn disputes. Disputes in turn focus around funding and high-visibility decisions, points at which conflict can produce change for those who find the surprises worrying or costly.

These destabilizing elements, which appear to be *inherent* in the social dynamics of adaptive processes, underscore the importance of patience, persistence, and a politically grounded determination to make constructive use of inevitable conflicts. Disputes are sure to arise within the spans of space, time, and functional interaction that characterize the mismatched cycles of human endeavor.

Not solutions but frontiers

As my comments have suggested, co-management, bioregionalism, and adaptive management each bring important ideas to the pursuit of a sustainable and just ecosystem management. But none seems to provide an overall answer. We have ideas, not solutions. These ideas help to clarify the conflicts but they cannot reliably resolve the disputes.

I have tried to summarize my discussion in a chart that I've handed out.

[overhead: chart]

The first two rows reproduce the table I showed you earlier, comparing the ideas of ecosystem management to the patterns of human behavior and

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institutions. The third row arrays the three change strategies I've just described — co-management, bioregional governance, and adaptive management — along the spectrum of ecosystem management principles. Co-management is a direct attempt to engage with the need to manage at the landscape scale; bioregionalism seeks to bring an ecological unity to human information gathering and perception; and adaptive management is a way to bridge the homogeneous uses that humans impose upon heterogeneous ecosystems, so that we may learn from both rehabilitating ecosystems and from domesticating others.

The two pairs of crossed arrows in the lower part of the chart are meant to suggest that the social ideas that make sense in thinking about ecosystem management are likely to have inconsistencies. For example, the sharing of authority that is central to co-management empowers land-owners and the fragmented, narrow understandings that I called owner's knowledge earlier. The voices of owners, in turn, are likely to come into conflict with the bioregional insistence upon perceiving the landscape as a connected biotic system. And in turn, the notion that an ecosystem has integrity that deserves protection chips away at the idea of property rights. We know already that the defense of property rights is a vigorous one.

Similarly, the experimental mood of adaptive management promotes not only learning but questioning, including questioning of the inter-generational tradeoffs that are unavoidable if human endeavors are to take into account the time scales of ecosystems (Lee 1993a, chap. 8). Conversely, the environmentalist's instinct for prudence in the face of uncertain change must face the reality that learning by experiment requires manipulation of ecosystems. Although we have an economy increasingly

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devoted to the production and handling of information, we have few widely shared guidelines about the value of information. As a result, it is hard to judge — and even hard to argue over — whether a proposed modification of an ecosystem is likely to produce valuable information.

[overhead off]

Ecosystem management in coastal Alaska

In short, ecosystem management encounters the fundamental challenge of democratic public policy — the challenge of reconciling rational ideas with historical circumstance. In that context, I'd like to share some thoughts about the relationship between the scientific ideas that you work with and the historical setting of the *Exxon Valdez* oil spill.

In opening this workshop yesterday, Molly McCammon drew attention to the 171 publications — refereed journals and theses — that have emerged so far from your research program. Collectively, these publications are an important milestone, marking the *reliable* knowledge your creativity and energy have produced. We've seen ample evidence in the posters, in the talks, — and perhaps most of all in the idealism of the kids in the Prince William Sound Youth Area Watch — of the determination that goes into making knowledge reliable. It's the refereed journals that certify this determination.

But few people can read 171 publications, certainly not when they range over the technical fields you all work in. And the value of these publications goes beyond the scientific audiences served by the refereed journals. How should the trustee council bridge the gap between reliable knowledge and its meanings to society?

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There is one group that knows those 171 papers and theses: the peer review panel chaired by Bob Spies. That panel should write a synthesis of the work coming out of the trustee council's research program, aiming to publish it in *Science*, *Nature*, or another of the widely read (but still refereed) national magazines. Such a paper should be written every two or three years.

So long as I'm offering unsolicited advice, let me say something about people as well as science. Something an outsider finds surprising about what you do here is the way you focus on the natural world. As three ecosystem studies implicitly acknowledge, the trustee council's jurisdiction isn't one ecosystem but many. What defines the spatial scope of your work is disturbance — a human disturbance, the oil spill. That disturbance created a large but finite pool of resources, the settlements that the council administers. Although you work in the natural world, the scope, structure, and resource base of your activities is touchingly human. What you do arises from grief and worry, from the pursuit of justice — from values that are incomprehensible without humans in the landscape.

Yet the restoration, protection, and research activities you carry out have only accidental ties to the *future* human presence in Prince William Sound. There has been debate recently about what "restoration" should mean. But, more than halfway into the payment period for the trustee funds, that argument strikes me as far less important than the question of what "stewardship" should mean.

As the funds under the council's supervision are spent, the pace of land acquisition, research, and other activities will necessarily subside.

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Isn't that the practical meaning of "restoration": the state of Prince William Sound when the money runs out?

Alaskans are famously skeptical of outsiders from the Lower 48. I won't press my luck here today, beyond saying that the meaning of words like "stewardship" and "restoration" are human words, invested with social meaning. Looking at the abstracts of the impressive range of science done with council sponsorship over the past year, I see the raw materials for meaning. Your most recent annual report is graced by the phrase, "where there is life there is hope." By the turn of the century, a lot more than hope will be needed. What is needed, to my way of thinking, is a way to understand the oil spill and the restoration as a historical period in coastal Alaska's natural and human communities. That understanding must draw upon the scientific knowledge and restoration activities you have carried out. But it must be framed by and rooted in the human communities that will go on beyond the restoration period. I don't know how that should be done; it just seems to me that the conversation isn't very audible yet, at least to an outsider.

Concluding thoughts

[slide: Earth from space]

Ecosystem management is, in concept, a strategy for organizing social responsibility in natural systems. The name of the strategy misleads in three ways: first, as ecological scientists know, ecosystems are human constructs, rather than biological units given by nature (Allen and Hoekstra 1992); second, what is being managed in ecosystem management is people, not just non-human elements of ecosystems; and third, as I have

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emphasized here, the management process is political and cultural rather than managerial in the usual sense of command and control.

That the activity of ecosystem management is so different from the ordinary-language implications of the name "ecosystem management" reflects, I think, the deep ambivalence industrial societies have about the natural world and the place of our species within it. Our growing ability to link together, control, destroy, and remake significant portions of the biosphere raises the question of how to make our presence more deliberate, less careless, and perhaps over time wiser. That is the question of harmonizing this familiar view of the biosphere to a quite different one.

[slide: Earth at night]

The natural planet is powered by the sun — atmosphere, ocean, and biota all derive their motive energy from solar radiation. This image, Earth at Night, assembled by the astronomer Woodruff Sullivan from weather-satellite photographs, shows us the human planet, illuminated by energies of human origin.

Whether they are the fires lit to clear lands for agriculture in the tropics, or the flaring of natural gas in the oil fields of Siberia, or the brilliance of urban landscapes, these are lights that are both recent in the places where they shine and temporary on time scales of ecological relevance. In Earth at Night only the aurora and possibly some wood-fueled fires are sustainable. A challenge for ecosystem management is to find a way for civilization to persist in the face of this historical context. I'm glad to be here with you to pursue that search.

Thank you.

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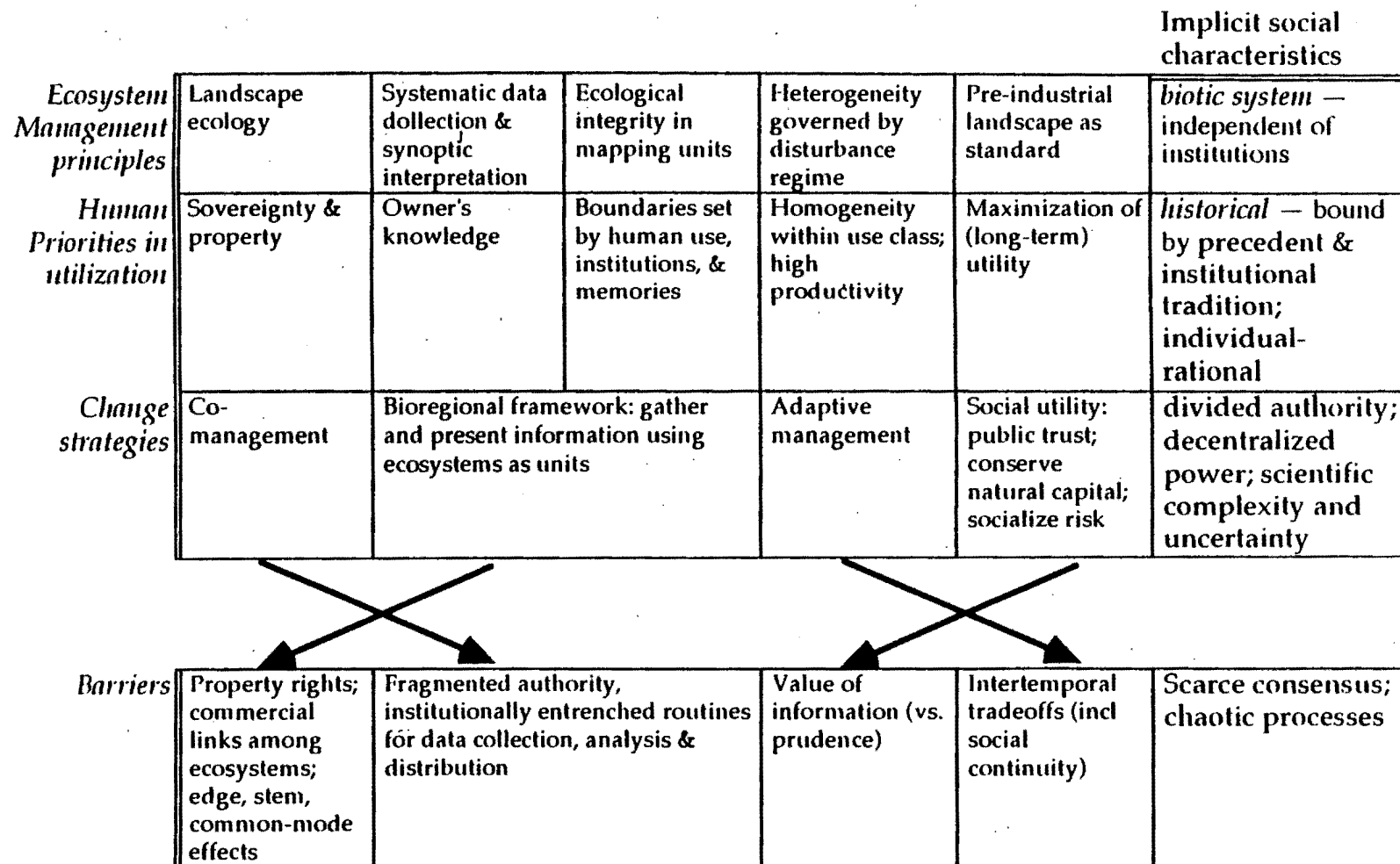
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