19.08.05 (185)

19.08.05

FY 2000 Final Work Plan

DPDs and Budgets

Exxon Valdez Oil Spill Trustee Council

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

MEMORANDUM

TO: Restoration Work Force

FROM: Sandra Schubert Sandra

RE: Binders of FY 00 DPDs and Budgets

DATE: September 14, 1999

The attached binders contain DPDs and detailed budgets for the FY 00 projects approved by the Trustee Council on August 9, 1999. Deferred projects will be taken up by the Council on December 16, 1999. DPDs and budgets for any projects approved at that time will be provided as addenda to these binders. Each binder contains an index of projects approved in August. The following projects have been deferred:

Proj. #	Project Title
00195	Pristane monitoring in mussels
00222	Chenega Bay dump rehab.
00256B	Solf Lake stocking
00339	Human use model (part)
00366	Remote video technology
00374	Juvenile herring in PWS
00379	Risk to residual oil: P450
00389	3-D ocean state simulations
00391	CIIMMS
00396	Salmon sharks, sleeper sharks, spiny dogfish
00416	O'Brien Creek restoration
00453	Monitoring removal of foxes
00478	Testing satellite tags on halibut
00481	Documentary on intertidal resources
00514	Lower Cook Inlet waste mgt. plan ($800.0)
00562	Effects of VHS
00563	Kenai streambank habitat utilization study
00567	Contaminants (part)

FY 00 WORK PLAN - INDEX OF DETAILED PROJECT DESCRIPTIONS APPROVED BY TRUSTEE COUNCIL 8/9/99

Proj.No.	Project Title
00007A-CLO	Archaeological Index Site Monitoring
00012A-BAA	Photographic and Acoustic Monitoring of Killer Whales in Prince William Sound and Kenai Fjords
00025-CLO	Mechanisms of Impact and Potential Recovery of Nearshore Vertebrate Predators (NVP)
00048-BAA	Publication: Historical Analysis of Sockeye Salmon Growth Among Populations Affected by the Oil Spill and Large Spawning Escapements
00052	Community Involvement/Traditional Ecological Knowledge
00064-CLO	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in Prince William Sound
00090-CLO	Monitoring of Oiled Mussel Beds in Prince William Sound
00100	Public Information, Science Management, and Administration
00126	Habitat Protection and Acquisition Support
00139A2	Port Dick Creek Tributary Restoration and Development
00144A-CLO	Common Murre Population Monitoring
00159	Surveys to Monitor Marine Bird Abundance in Prince William Sound During Winter and Summer 2000
00163-CLO	Alaska Predator Ecosystem Experiment in Prince William Sound and the Gulf of Alaska (APEX)
00169-CLO	A Genetic Study to Aid in Restoration of Murres, Guillemots, and Murrelets in the Gulf of Alaska
00180-CLO	Kenai Habitat Restoration and Recreation Enhancement
00190	Construction of a Linkage Map for the Pink Salmon Genome
00210	Youth Area Watch
00225	Port Graham Pink Salmon Subsistence Project
00245	Community-Based Harbor Seal Management and Biological Sampling
00247	Kametolook River Coho Salmon Subsistence Project
00250	Project Management
00263	Assessment, Protection and Enhancement of Salmon Streams in Lower Cook Inlet
00273	Scoter Life History and Ecology: Linking Satellite Technology with Traditional Knowledge to Conserve the Resource
00278	Development of an Ecological Characterization and Site Profile for Kachemak Bay/Lower Cook Inlet
00287-BAA	Seabird-Oceanographic Relationships in the Northern Gulf of Alaska: Integration with NSF/NOAA Study GLOBEC
00290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance
00306-CLO	Ecology and Demographics of Pacific Sand Lance in Lower Cook Inlet
00320-BAA	Sound Ecosystem Assessment (SEA): Publishing the Integrated Final Report and a Program Synthesis
00327	Pigeon Guillemot Restoration Research at the Alaska SeaLife Center

FY 00 WORK PLAN - INDEX OF DETAILED PROJECT DESCRIPTIONS APPROVED BY TRUSTEE COUNCIL 8/9/99

Proj.No.	Project Title
00330-CLO	Mass-Balance Model of Trophic Fluxes in Prince William Sound
00338	Survival of Adult Murres and Kittiwakes in Relation to Forage Fish Abundance
00339-CLO	Western Prince William Sound Human Use and Wildlife Disturbance Model
00340	Toward Long-Term Oceanographic Monitoring of the Gulf of Alaska Ecosystem
00341	Harbor Seal Recovery: Controlled Studies of Health and Diet
00347-CLO	Fatty Acid Profile and Lipid Class Analysis for Estimating Diet Composition and Quality at Different Trophic Levels
00348-CLO	Responses of River Otters to Oil Contamination: A Controlled Study of Biological Stress Markers
00360-BAA	The *Exxon Valdez* Oil Spill: Guidance for Future Research Activities
00371	Effects of Harbor Seal Metabolism on Stable Isotope Ratio Tracers
00375-CLO	Effect of Herring Egg Distribution and Ecology on Year-Class Strength and Adult Distribution
00393-BAA	Prince William Sound Food Webs: Structure and Change
00401	Assessment of Spot Shrimp Abundance in Prince William Sound
00407	Harlequin Duck Population Dynamics and Satellite Telemetry
00414-BAA	Development of a Web-Based System for Communicating Ecosystem Research Results to the Public
00423	Patterns and Processes of Population Change in Selected Nearshore Vertebrate Predators
00424	Restoration Reserve
00441	Harbor Seal Recovery: Effects of Diet on Lipid Metabolism and Health
00454	Evidence and Consequences of Persistent Oil Contamination in Pink Salmon Natal Habitats
00455-BAA	An Evaluation of the Data System for the EVOS Long-Term Monitoring Program
00459-CLO	Residual Oiling of Armored Beaches and Mussel Beds in the Gulf of Alaska
00462	Effect of Disease on Pacific Herring Population Recovery in Prince William Sound
00466-CLO	Recovery Status of Barrow's Goldeneyes
00476	Effects of Oiled Incubation Substrate on Pink Salmon Reproduction
00479	Effects of Food Stress on Survival and Reproductive Performance of Seabirds
00482-BAA	Optimization of Rapid Diagnostic Test Kits for Paralytic Shellfish Poisoning and Amnesic Shellfish Poisoning
00493	Statistically-Based Sampling Strategies for Gulf of Alaska Ecosystem Trawl Survey Monitoring
00501	Protocols for Long-Term Monitoring of Seabird Ecology in the Gulf of Alaska
00509	Long-Term Monitoring of Harbor Seal Populations: Development of an Experimental Design
00510-BAA	Recovery of Intertidal Communities and Recommendations for Future Monitoring
00516-BAA	Publication: Comparative Habitat Use by Kittlitz's and Marbled Murrelets

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00541-BAA	Publication: Prince William Sound Isotope Ecology
00552-BAA	Exchange Between Prince William Sound and the Gulf of Alaska
00567	Monitoring Environmental Contaminants in the Northern Gulf of Alaska
00598	Publication: Resolution of Mixtures Containing *Exxon Valdez* Oil and Regional Background Hydrocarbons in Subtidal Sediments
00599	Evaluation of Yakataga Oil Seeps as Regional Background Hydrocarbon Sources in Benthic Sediments of the Spill Area
00605	Information Transfer to Resource Managers, Stakeholders, and General Public
00610	Kodiak Island Youth Area Watch
00630	Planning for Long-Term Research and Monitoring Program

FY 00 WORK PLAN - INDEX OF BUDGETS APPROVED BY TRUSTEE COUNCIL 8/9/99

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00610	Kodiak Island Youth Area Watch
00630	Planning for Long-Term Research and Monitoring Program

00007A

Revision 8-3-99
Adopted TC 8-9-99

Archaeological Index Site Monitoring

Project Number: 00007A

Restoration Category: Monitoring

Proposer: ADNR- Office of History and Archaeology

Lead Trustee Agency: ADNR

Cooperating Agencies: DOI-FWS, DOI-NPS, USFS

Alaska SeaLife Center: No

Duration: Closeout, 6th year,10-year project

Cost FY 00: $90.2

Cost FY 01: $0

Geographic Area: Prince Willam Sound, Kenai Peninsula, Kodiak Island

Injured Resource: Archaeological Resources

ABSTRACT

Monitoring of archaeological sites on public land injured by vandalism and oiling concentrated on a sample of index sites in the three regions of the spill. Oiled sites were tested for re-introduced oil. This closeout of the archaeological index site monitoring program will provide a final report of findings and conclusions for the life of the project. It will also see placement of artifact collections and documentation in appropriate repositories.

INTRODUCTION

Damage to archaeological sites as a result of cleanup activities after the Exxon Valdez Oil Spill was amply documented in damage assessment studies performed since the spill. Damage from vandals continued to be documented at several sites on public lands during the past several seasons. Although damage from vandals at other sites has not been documented, vandals remained active in the region and their level of depredations needed to be monitored. Monitoring of damaged sites as a gauge of vandal activities in the spill area was identified as a primary strategy for site restoration during 1995 and was continued to provide a long term assessment of the problem. A consensus was reached among agency archaeologists and concurred with by the peer reviewer that the most efficient way to monitor vandalized sites was to select "index" damaged sites to provide an indication of the level of vandal activity in the spill area.

The archaeological peer reviewer for the Trustee Council recommended during the 1995 science workshop that monitoring continue at oiled sites to check for new movement of buried oil into site deposits. His concern was that subsurface oil would move into archaeological deposits and compromise possible data recovery. That recommendation continued to guide field work at several sites through the duration of the program.

Monitoring of archaeological sites injured by the spill or spill related activities targeted a small number of sites on public lands which were determined to represent those most vulnerable to looting or oiling. Those index sites served as a gauge for levels of vandalism in the spill area. Index sites oiled during the early time immediately after the spill in March 1989 were monitored during 1995, 1997, and were returned to during 1999. The current proposal aims at compiling the findings of the past damage assessments and seven years of site monitoring into a single coherent report. It includes write-up of findings from the prior fiscal year field season as has been the practice in past seasons.

NEED FOR THE PROJECT

A. Statement of Problem

Sites monitored under the project are index archaeological sites thought to be representative of archaeological sites on the public lands in the spill area which have been oiled or are being vandalized. Some sites were oiled during the spill and have been monitored to check for post-spill movement of subsurface oil into site deposits.

Vandalism during cleanup appeared to be associated with people placed near sites while living on chartered boats. Circumstantial evidence indicates that some crew members, many of whom are residents of coastal communities, were involved in looting of sites. Agency resource managers feared that looting associated with cleanup continued on and spread to other sites of

the area.

Oil was found in beach sediments at several of the sites selected as index localities although none was initially documented in site deposits. A goal of this project was to monitor those sites to detect movement of the persistent oil into cultural deposits from the surrounding sediments.

B. Rationale

Loss of sites to vandals and pollution of sites from remaining oil removes the ability of archaeologists to recover data about the prehistory from those sites. The number of sites in the area is finite and will not increase. Reasonable efforts must be made to protect the cultural heritage data base from degradation. Loss of sites in the area to erosion continues, making loss from vandal degradation more critical.

C. Location

The project has occurred in Prince William Sound, on the outer coast of the Kenai Peninsula, and in the Kodiak Island archipelago. Most sites are located in very remote areas.

COMMUNITY INVOLVEMENT

The sites monitored under this project are remote. Because of the remoteness, no direct community involvement has occurred. The closeout of the project will not involve significant local community involvement.

PROJECT DESIGN

A. Objectives

The overall intent of the archaeological site monitoring program has been to maintain a current assessment of the status of vandalized sites in the oil spill area and sites oiled during the spill. Knowledge of continuing and current site status is required to protect the sites from degradation. The objectives of the project have been:

1. Monitor vandalized sites to identify continuing vandal activity in order to protect the sites. Information about index sites will be projected for management planning to the larger inventory of sites in the spill area.
2. Monitor sites contaminated by oil during the Exxon Valdez Oil Spill to identify any encroachment of subsurface oil into the cultural deposits from surrounding sediments.

The intent of the project has been to maintain a presence at the vandalized sites for a long enough period of time to gauge levels of vandalism and discourage that activity by our presence. The

long range intent by FY2004 was to reduce that activity to zero. Because the incidence of vandalism has diminished at index sites, the need for further monitoring has also diminished.

B. Methods

A strategy was identified during the 1994 restoration workshop of designating index sites, vulnerable to looting, which were to be monitored bi-annually as a check over a broader area. A second group of sites were identified which were also to be monitored, but less frequently. The second group of sites provides a cross-check to monitoring data collected at the index sites. Focusing annual monitoring on 4 index sites and using a 2-year monitoring schedule on the additional 4 sites, expenditures could be significantly reduced while maintaining continuity of tracking vandalism over the years. Vulnerability to looting was the primary criteria of selection with managerial jurisdiction a secondary concern. Sites which were oiled were monitored for oil so that effect of oiling could be observed over the long term in archaeological deposits.

Documentation of site status at the localities monitored for vandalism included re-locating previously established reference points and referring all observations to those points. Field maps were drawn or surveyed as appropriate. Photo and video documentation was referenced to datum points and duplicated earlier perspectives as closely as possible. Test localities were mapped relative to site datum points.

Closeout of the index site monitoring project will include preparation of a final monitoring report which will compile findings, trends, site status, and conclusions about vandal activities into a single document. The final report will include compiling the findings from the various annual reports in a coherent, standard format, bound as a single unit. Status of each index site will be reviewed and summarized from the time the program first began until closeout. The closeout report will contain observations about the program, and recommendations for possible future spills. Also included in closeout will be transfer of support documentation to the appropriate archive for long term storage. Collections and supporting documentation will transferred to the appropriate repository or interim storage until the Prince William Sound repository is ready to receive materials. Working files and collections under study remain in the possession of various investigators and agencies pending wrap-up of the program.

C. Cooperating Agencies, Contracts, and Other Agency Assistance

Cooperating agencies under this project are the DOI-U.S. Fish and Wildlife Service, DOI-National Park Service, and the USDA- Forest Service. Each of the federal agencies has management responsibilities for resources on lands assigned to them, including cultural resources. Each of those agencies has on staff qualified archaeologists who conducted archaeological activities on agency lands. The Alaska Department of Natural Resources is designated the lead agency only to coordinate all agency activities and compile the final results. The National Park Service opted to not request funding for closeout. Each agency will oversee

its own budget and submit its contribution to the final product..

No major contracts are anticipated by any agency for this project. Normal agency contracting procedures will be followed when contracting for radiocarbon dating or sediment analysis services. Radiocarbon dating will be done in commercial facilities, none of which exist within Alaska. Printing and binding of the final report will be done on a job basis in Anchorage at a commercial business.

SCHEDULE

A. Measurable Project Tasks for FY 00 (October 1, 1999 - June 1, 2000)

October 1, 1999 - December 31, 1999:	Complete requirements for NEPA requirements and prepare the report for FY 99 field activities.
February 1, 2000:	Complete draft of final report.
March 15, 2000:	Submit final report for peer and Chief Scientist review. Completed manuscript for the Notebook series submitted.
May 1, 2000 - June 1, 2000:	Finalize changes in final report for submission to OSPIC. Move documents and collections to appropriate repositories.

B. Project Milestones and Endpoints

This is the closeout for the archaeological index site monitoring program. The schedule listed for FY00 is applicable as the schedule for the project until complete. The endpoint will be a final report by June 1, 2000.

C. Completion Date

The archaeological index site monitoring was scheduled for completion in FY 2004. Apparent lessening of vandal activities and lack of movement of oil into index site sediments indicates stabilization of archaeological resource losses. Conclusion of the archaeological site index monitoring program will be accomplished by June 1, 2000.

PUBLICATIONS AND REPORTS

No formal publications are anticipated for this monitoring project. A manuscript suitable for final preparation in the EVOS Resource Notebook series will be completed for archaeological resources of the EVOS area. A final closeout report will be prepared.

PROFESSIONAL CONFERENCES

A presentation will be made at the annual meeting of the Alaska Anthropological Association in March 2000, summarizing data collected over the life of the EVOS archaeology program with reference to annual and final reports.

NORMAL AGENCY MANAGEMENT

Federal and state laws assign general responsibility for dealing with cultural resource matters to the various land managing agencies. None of the agencies cooperating in this monitoring project has ever funded a program of site monitoring or data collection at the sites identified in the project proposal. The data collected and conclusions reached have all been part of the archaeological site restoration process and will be reported by the investigators in the final report.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

This proposal is for closeout of the archaeological index site montoring and the final report will be part of the reporting procedure established for all restoration project reports.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

This proposal is for closeout of this project.

PROPOSED PRINCIPAL INVESTIGATOR

Douglas R. Reger
Office of History and Archaeology
Alaska Department of Natural Resources
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Anchorage, AK 99503-5921
(907) 269-8725
FAX (907)269-8908
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2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Approved TC 8-9-99

Budget Category:	Authorized FY 1999	Proposed FY 2000	PROPOSED FY 2000 TRUSTEE AGENCIES TOTALS					
			ADEC	ADF&G	ADNR	USFS	DOI	NOAA
Personnel	$0.0	$70.6						
Travel	$0.0	$1.8						
Contractual	$0.0	$4.9						
Commodities	$0.0	$2.0						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$0.0	$79.3			Estimated FY 2001	Estimated FY 2002		
General Administration	$0.0	$10.9						
Project Total	$0.0	$90.2			$0.0	$0.0		
Full-time Equivalents (FTE)	0.0	1.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources	$0.0	$0.0			$0.0	$0.0		

Comments: Project is Closeout for 95007A, 96007A, 97007A, 98007a, 99007A.

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Lead Agency: AK Department of Natural Resources

FORM 2A
MULTI-TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000						
Personnel		$52.8						
Travel		$1.8						
Contractual		$4.7						
Commodities		$1.0						
Equipment		$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$0.0	$60.3			Estimated FY 2001	Estimated FY 2002		
General Administration		$8.2						
Project Total	$0.0	$68.5			$0.0	$0.0		
Full-time Equivalents (FTE)		0.7						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:Project is Closeout for 95007A, 96007A, 97007A, 98007a, 99007A.

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Montioring
Agency: AK Department of Natural Resources

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 2000
Douglas R. Reger	Archaeologist II	18M	8.0	6.6		52.8
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		8.0	6.6	0.0	
					Personnel Total	$52.8

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 2000
Travel to Fairbanks to deposits archival data and access collections	0.3	2	4	0.125	1.1
Travel to Kodiak to deposit collections in the Alutiq Museum	0.4	1	2	0.125	0.7
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$1.8

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: AK Department of Natural Resources

FORM 3B
Personnel
& Travel
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FY 2000
Report printing and binding	2.0
Film processing	1.5
Radiocarbon dating, 4 samples @ $300 each	1.2
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$4.7

Commodities Costs:	Proposed
Description	FY 2000
Office supplies	1.0
Commodities Total	$1.0

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: AK Department of Natural Resources

FORM 3B
Contractual & Commodities DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2000
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY00

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: AK Department of Natural Resources

FORM 3B
Equipment
DETAIL

Prepared:

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000
Personnel		$9.5
Travel		$0.0
Contractual		$0.0
Commodities		$1.0
Equipment		$0.0
Subtotal	$0.0	$10.5
General Administration		$1.4
Project Total	$0.0	$11.9
Full-time Equivalents (FTE)		0.2
Other Resources		

LONG RANGE FUNDING REQUIREMENTS

Estimated FY 2001	Estimated FY 2002
$0.0	$0.0

Dollar amounts are shown in thousands of dollars.

Comments:Project is Closeout for 95007A, 96007A, 97007A, 98007a, 99007A.

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: DOI Fish and Wildlife Service

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 2000
Debra Corbett	Archaeologist	GS-9	2.5	3.8		9.5
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		2.5	3.8	0.0	
					Personnel Total	$9.5

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 2000
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Site Index Monitoring
Agency: DOI Fish and Wildlife Service

FORM 3B
Personnel
& Travel
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FY 2000
Description	
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed FY 2000
Description	
Office supplies	1.0
Commodities Total	$1.0

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: DOI Fish and Wildlife Service

FORM 3B
Contractual & Commodities DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2000
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY00

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: DOI Fish and Wildlife Service

FORM 3B
Equipment
DETAIL

Prepared:

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000
Personnel		$8.3
Travel		$0.0
Contractual		$0.2
Commodities		$0.0
Equipment		$0.0
Subtotal	$0.0	$8.5
General Administration		$1.3
Project Total	$0.0	$9.8
Full-time Equivalents (FTE)		0.1
Other Resources		

LONG RANGE FUNDING REQUIREMENTS					
		Estimated FY 2001	Estimated FY 2002		
		$0.0	$0.0		

Dollar amounts are shown in thousands of dollars.

Comments:Project is Closeout for 95007A, 96007A, 97007A, 98007a, 99007A.

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: U.S. Forest Service

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 2000
L. Yarborough	Archaeologist	GS-11	1.5	5.5		8.3
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		1.5	5.5	0.0	
					Personnel Total	$8.3

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 2000
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: U.S. Forest Service

FORM 3B
Personnel
& Travel
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FY 2000
Description	
Photo processing	0.2
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.2

Commodities Costs:	Proposed FY 2000
Description	
Commodities Total	$0.0

FY00

Prepared:

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: U.S. Forest Service

FORM 3B
Contractual & Commodities DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2000
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY00

Project Number: 20007A
Project Title: Archaeological Index Site Monitoring
Agency: U.S. Forest Service

FORM 3B
Equipment
DETAIL

Prepared:

Revision 7-19-99
Approved TC 8-9-99

Photographic and Acoustic Monitoring of Killer Whales in Prince William Sound and Kenai Fjords

Project Number:	00012A-BAA
Restoration Category:	Monitoring
Proposer:	C. Matkin/North Gulf Oceanic Society
Lead Trustee Agency:	NOAA
Cooperating Agencies:	None
Alaska SeaLife Center:	No
New or Continued:	Cont'd
Duration:	8th yr. 9 yr. project
Cost FY 00:	$82.9
Cost FY 01:	
Cost FY 02:	$0.0
Geographic Area:	Prince William Sound, Kenai Fjords
Injured Resource/Service:	Killer whale

ABSTRACT

This project will continue the monitoring of the damaged AB pod and other Prince William Sound/Kenai Fjords killer whales that has occurred on a yearly basis since 1984. Methods include the photo-identification of individual whales and acoustic monitoring with remote and vessel-based hydrophone systems. The project continues interpretation of previous data and data collected with matching funds. It provides for publication of the results from this multi-year examination of killer whale population biology, acoustics, trophic interactions, spatial and temporal distribution patterns, and contaminant accumulation.

INTRODUCTION

This project is a continuation of the reduced annual killer whale monitoring program. Killer whales were monitored under EVOS Trustee Council funding in 1989, 1990, and 1991 (damage assessment) and in 1993 and 1995 (restoration monitoring) with a reduced annual monitoring program initiated in 1996.In addition this project provides additional analysis and publication of aspects of the comprehensive killer whale investigation initiated in FY95 and continued in FY96, FY97, and FY98. In FY99 a monitoring program was augmented with matching funding to continue aspects of genetic and contaminant analysis.

On March 31, 1989 AB pod was observed in oil sheens and six of the 36 pod members were missing. A total of 14 whales were lost from resident AB pod in the two years following the *Exxon Valdez* oil spill and there was no recruitment into the pod during those years. Since that time the social structure within AB pod has shown signs of deterioration. Maternal groups have traveled independently or with other pods, and pod members have not consistently traveled with closest relatives. Although 4 calves were recruited during the period 1992-1994, there were 5 additional mortalities in 1994. There has been a net increase of three indivduals since 1995 and the pod currently contains 25 individuals. The rate of mortality observed in this pod after the oil spill far exceeds that recorded for other resident pods observed in Prince William Sound over the past 13 years or for 19 pods in British Columbia over the past 20 years.

Nine whales from the transient AT1 group have not been observed since 1989. Two additional AT1 whales have not been sighted for six years. From genetic and photographic data from beached whales, two of these eleven whales are known to be dead. Although transient killer whale social structure is not fully understood, we are increasingly confident that the missing AT1 whales are dead. Statistical analysis strongly suggests that they have either died or permanantly emigrated from the area. Since there is no record of them in adjacent regions it is very likely they are dead.

This project will continue the monitoring program necessary to map the changes (recovery or non-recovery) of Prince William Sound killer whales on a reduced annual basis. Behavioral observations and spatial and temporal data will be collected opportunistically in the course of photographic and acoustic monitoring, but there will be no new analysis of this data.

Fourteen years of systematic data collected under public and private funding have been placed in a specially designed GIS system at the Prince William Sound Science Center. The database contains 713 records of encounters with killer whales in and near Prince William Sound. Among these are 197 encounters with transient-type whales. Analyses have found large-scale differences in spatial distribuition patterns between resient and transient whales over time. Changes in transient whale distributions have been examined in relation to changes harbor seal populations. Detailed distribution patterns in space and for both residents and transients have been examined and are in the process of publication.

There is worldwide concern that specific PCB and dioxin congeners may have negative effects on reproduction in mammals. The recovery of killer whales in Prince William Sound and the long-term health of the population is dependent on unimpeded reproductive processes. During this study we have determined contaminant levels in both resident and transient killer whales, and found much higher levels in the transient population. Contaminants seem to passed from mother to offspring via lactation and levels follow consistent patterns within genealogies. Samples were obtained from individually identified living whales that can be resampled to assess future changes. The ability to sample and potentially resample specific known individuals and their known kin is a unique

aspect of this project. Comparisons with other cetecean populations is in process, correction factors must be developed for variance in analytical techniques. Preliminary results raise concern that contaminants in transient whales could negatively impact reproduction. There has been no successful reproduction in the AT1 group since 1984. We seek some funding in FY2000 for additional sampling of transients and analysis publication of these results. All chemical analysis of tissue and some interpretation of results been provided without cost by the NMFS/NOAA Environmental Contaminant Laboratory, Seattle, Washington.

In FY97 we initiated a remote hydrophone and acoustic analysis element to this project. Initial analysis and separation of pods was completed in FY 97. An additional hydrophone was established in Resurrection Bay in FY98, although problems with location rendered it ineffective in winter months. We plan to change the current location based on acoustic measurements and the observed distribution of whales in winter 1998/99

Final analysis of pod specific dialects has been hampered by insufficient recordings of particular pods including AJ, AG, and AF to clearly establish pod specific calls. (NGOS is using a 15 year database of killer whale recordings to establish these dialects). Recordings can be used to document the presence of specific killer whale pods and groups. With cooperation of the Alaska Sea Life Center the remote hydrophone system in Resurrection Bay will be converted to microwave transmission and linked to the recently established microwave system used for remote viewing of Steller sea lions. The long-term goal of this aspect of the project is to determine the year-round habitat use of southwestern Prince William Sound and Kenai Fjords by AB pod and other killer whale pods and provide an additional, innovative, and cost effective tool for monitoring killer whales year round. Also a hydrophone in Resurrection Bay has the added benefit of providing a continous live feed to the Alaska Sea Life Center for education of visitors and residents. In winter 1998/99, using in kind donations for opportunistic surveys, we were able to determine that AB pod used inner Resurrection Bay on a consistant basis in all months from October to April. Other pods including AI, AN10, and AJ were also present at times.

NEED FOR THE PROJECT

A. Statement of Problem

The AB pod of killer whales was injured by the EVOS. Although it had shown signs of recovery from 1991 to 1993, mortalities in 1994/95 reduced the number of surviving AB pod whales to 22. Since 1995 there has been a net gain of three individuals but recovery is still uncertain. At least 11 of the AT1 group of transient killer whales have apparently died since 1989 and there has been no reproduction within the group. This project will continue to monitor the status of AB pod and the AT1 group.

Sightability of killer whales in Prince William Sound has changed since the spill; whales are now more frequently encountered in the Kenai Fjords region. Mortalities following the spill have apparently led to additional mortalities. Deterioration in AB pod social structure has led to a situation where subpods now travel separately; the AB25 supod travels with AJ pod. Despite considerable effort, re-sightings of the AT1 group have declined and fewer individuals are seen when members of this transient group group are located. We are confident that half of the original 22 members of this group are dead, or have emigrated to other regions; the later possiblity is unlikely.

Although the rate of encounter with members of the AT1 transient group has declined, there has been no detectable increase in the sightings of other transient groups, suggesting that other transients are not increasing their use of the Sound as use by the AT1 group declines. Whether this overall decline in the encounters with transient (marine mammal eating) killer whales is related to oil spill effects or ecosystem changes is not clear,

but we suspect a combination of the two factors. The severe decline in harbor seals and Steller sea lions are undoubtedly important factors in the decline.

MtDNA and nuclear DNA analysis has demonstrated the genetic uniqueness of the AT1 group from residents as well as from other transients. Our nuclear DNA analysis is confirming those differences. The loss of the AT1 group could represent a serious overall loss of genetic diversity.

Some environmental contaminants such as PCBs and DDTs have been linked to reproductive dysfunction in mammals. We have discovered high levels of these contaminants in the transient (marine mammal eating) killer whales, including the non-reproducing AT1 group. When compared to other cetacean populations, these levels appear to be in a range that could result in reproductive dysfunction or other effects that might impede recovery of this group.

B. Rationale/Link to Restoration

Annual killer whale population monitoring will determine recovery status of AB pod and the AT1 transient group. The actual status of AB pod is considered non-recovering at this time. Long term patterns will only be clarified by continued monitoring. A low level annual monitoring program was initiated in FY96 and is proposed to continue in FY00. Since all pods and whales are not observed in every year, annual monitoring will prevent extensive data gaps and allow certain determination of recruitment and mortalities in a much shorter time frame. An annual killer whale behavioral database of spanning 15 years now exists in a GIS format. It is accompanied by a photographic database the includes identiffications of all individuals from each frame of film for every encounter logged in the GIS system. This data system will be used to log all encounters and effort. Because killer whales are a long-lived species with low reproductive and mortality rates, this monitoring must be consistent and long-term to be meaningful. Without the pre-spill monitoring of these whales any damage assessment would have been impossible. This species is a key ecosystem element reflecting long-term environmental trends and is worthy of a long-term program

Continued development of acoustic monitoring and dialect analysis will eventually provide a cost-effective year- round extension of the monitoring program. We will continue to work cooperatively with the Alaska Sea Life Center, Kenai Fjords National Park,and Daniel Zatz in this endeavor. This program will directly involve residents and visitors in the process of monitoring and restoration via linkage with Alaska Sea Life Center system that currently provides video/acoustic monitoring of Steller sea lions.

C. Location

This project is part of an ongoing killer whale research in Prince William Sound and the Kenai Fjords region, Alaska. The project involves the village of Chenega, Port San Juan Hatchery, the Alaska Sea Life Center, Kenai Fjords National Park, and other residents and visitors to the region. It operates cooperatively with the Kenai Fjords and Prince William Sound tourboat industry.

COMMUNITY INVOLVEMENT AND TRADITIONAL ECOLOGICAL KNOWLEDGE

There is great public concern and interest for killer whales in Prince William Sound and in Kenai Fjords. The rapidly expanding tourboat industry depends on a healthy killer whale population to attract and satisfy visitors and residents. We have been closely

involved with tourboat and recreational operators and residents by exchanging sighting information on a daily basis and providing a catalogue of individual whales to enhance enjoyment of whale observation. We have provided workshops detailing whale biology and stressing whale watching guidelines. Recent publication of an updated identification catalogue that includes details of our research results and viewing guidelines has further sparked interest in these whales. Killer whales now draw thousands of visitors to the region each year.We are working cooperatively with the Youth Area Watch through the Chugach School District to take young students into the field and allow them to directly participate in our research.

Residents and visitors to the spill area will be directly involved in the killer whale project by participating in the monitoring of the remote hydrophone system at the Alaska Sea Life Center.

We continue to collect observations and stories from native residents and others that will provide background for interpretation of our findings and place the work in a historical and cultural perspective. Some of these legends and stories are used to place our research in a broader context in our recent publication: "Killer Whales of Southern Alaska".

PROJECT DESIGN

A. Objectives

1. Continue photographic monitoring program and determine status of resident killer whale pods, particularly AB pod. Examine the demographics of this pod in relation to other resident killer whale pods.

2. Monitor the AT1 group of transient killer whales to determine mortality or recruitment and indications of recovery to pre-spill distribution and abundance.

3. Monitor year round movements of resident and transient killer whales using remote hydrophones in Resurection Bay.

4. Continued analysis of calls and separation of pod dialects necessary for interpretation of remote hydrophone data. Prepare for publication.

B. Methods

Killer Whale Monitoring

The goal of this aspect of the study is the photoidentification of each individual in each pod/group, that regularly uses the Sound, particularly AB pod and the AT1 group. Knowledge of the demographics of all regularly sighted pods and groups may be necessary to meet recovery definitions.

Thus, it is important that researchers maximize the time actually spent with killer whales (particularly AB pod and the AT1 group) to insure thorough identification of all individuals. Methods proposed to obtain photographic data necessary to meet monitoring objectives will be similar to those used by the NGOS in Prince William Sound/Kenai Fjords for the past fifteen consecutive years. Searches for whales will not be made on random transects, but based on current and historical sighting information. In addition whales will be located by listening for killer whale calls with a directional hydrophone (calls can be heard up to 10 miles away), or by responding to VHF radio calls from other vessels reporting sightings of whales. We have developed network of cooperating vessel

owners and tourboat operators that regularly report whale sightings. In addition requests for recent killer whale sightings will be made routinely on hailing Channel 16 VHF and working channel 77.

A vessel log and chart of the vessel track will kept for each day the research vessels operate. The elapsed time and distance traveled will be recorded and vessel track plotted. Record will be made of the time and location of all whale sightings and the weather and sea state noted at regular intervals.

Specifics of each encounter with killer whales will be recorded. The killer whale encounter data sheet developed in 1995 and specifically tailored to GIS data entry requirements will be used. Data recorded will include date, time, duration, and location of the encounter. Rolls of film exposed and the estimated number of whales photographed will also be recorded. A chart of the whales' trackline during the encounter will be completed and the distance traveled by the vessel with the whales will be calculated at the time of GIS input. General behavior of the whales (i.e. feeding, resting, traveling, socializing, milling) will be recorded by time and location.

Photographs for individual identification will be taken of the port side of each whale showing details of the dorsal fin and grey saddle patch. Photographs will be taken at no less than 1/1000 sec using Fuji Neopan 1600, a high speed black and white film,. A Nikon 8008 or N70 autofocus camera with internal motor drive and a 300 mm f4.5 autofocus lens will be used. When whales are encountered, researchers will systematically move from one subgroup (or individual) to the next keeping track of the whales photographed. If possible, individual whales will be photographed several times during each encounter to insure an adequate identification photograph. Whales will be followed until all whales are photographed or until weather and/or darkness makes photography impractical.

All photographic negatives will be examined under a Wild M5 stereomicroscope at 9.6 power. Identifiable individuals in each frame will be recorded. When identifications are not certain, they will not be included in the analysis. Unusual wounds or other injuries will be noted. Photographic negatives will be analyzed using a photographic database that spans fifteen years. Identities of each whale that appears in every frame of usable film will be recorded and stored in VAX computer system. Final analysis and assessment will follow Matkin et al. (1994).

The primary vessel used to secure identification photographs will be a 27' diesel inboard/outboard powered vessel that can sleep two individuals (R.V. *Whale 2).* With sleeping accommodations and large fuel capacity, the R.V. *Whale 2* resupplies infrequently which greatly increases available time searching for or photographing whales.. This vessel will operate a total of 50 days, from late July July through early September. From historical data these dates are judged to be to be the most likely time to encounter AB pod as well as many of the other resident pods that use the Sound and Kenai Fjords. There will be some flexibility of schedule in response to sighting reports. The R.V. *Lucky Star* will also deliver fuel to designated locations and provide other logistical support for the operation of the R.V. *Whale 2.* The *Lucky Star* will operate a total of 3 days.

The report for the monitoring segment will include a summary of field effort, and summary of the pods and individuals encountered and a status report on AB pod and the AT1 group. Changes within AB pod will be examined with consideration for the age and sex structure of the pod and maternal groups within the pod. Frame by frame input of identification data from exposed film into VAX and IBM PC computer systems will occur and identifications tabulated by pod and by individual. Copies of killer whale encounter data and vessel logs will be made available to the EVOS Trustee Council and/or lead agency and this data will be archieved in the GIS database for potential future analysis. Frame by frame identification data will also be made available on disc. Copies of the GIS program and data base will also be made available by request to NGOS.

Acoustic Monitoring

Pod specific dialects for resident killer whales have been determined from tape recordings made by several researchers in the Prince William Sound area and in Southeast Alaska during the spring and summer months of the years 1984 to 1997. Construction of a catalogue of pod specific dialects is ongoing and dependent on recordings that will be made during the FY99 field season. Specific calls from Prince William Sound transient (AT1 group) killer whales also have been catalogued (Saulitis 1993). A total of 8456 calls have been screened and digitized using a Kay Elemetrics Real Time Sound Spectrum Analyzer, Model 5500. Samples from this screening process were digitized using the Canary acoustic spectrum analysis software (The Cornell Bioacoustics Workstation). Calls from different killer whale pods and transient groups are being categorized using the same method used by John Ford in British Columbia, Canada. This process involves arbitrary acoustical identification paired with a visual and statistical comparison of sound spectra. The results of this initial analysis were presented at the 12th Biennial Conference of Marine Mammalogy in Monaco (Jurk , H., Barrett-Lennard, L., Ford, J.K.B., Matkin, C.M., Saulitis, E., and K. Heise. 1998. Clans among resident killer whales (*Orcinus orca*) in Prince William Sound.)

The final asssessment of repertoires of Prince WilliamSound killer whales will occur in FY99 and a paper readied for publication. Hopefully this will include the repertoires of the less frequently encountered pods from which we will attempt to obtain recordings from in FY99. In addition, recordings from the remote hydrophone obtained will be analyzed. The acoustic relationships between resident pods will be clarified and futher compared with genetic results. While similarities of mitochondrial DNA sequences or overall genetic similarity describes relatedness of pods within the past 10,000 to 20,000 years, dialects reflect the more recent history of community divergence.

Because of movements of killer whales into the Kenai Fjords region during the winter months in recent years, our remote hydrophone will be operated in the Thumb Point area of Resurrection Bay . An anchored and encased cable will run from the transmitter on shore to the hydrophone at a depth of about 20 meters. A microwave transmission system will be integrated with the current remote sea lion viewing system at the Alaska Sea Life Center.

During summer months the hydrophones will be monitored from the R.V.*Whale 2* via broad band receiver as an aid in locating whales. During the summer and winter months in Kenai Fjords it will be monitored by the Alaska Sea Life Center. Receivers will be equiped with recording systems. The receiver will be monitored on a regular scheduled basis and a log of operation maintained in conjunction with the sea lion research program. In the future we hope to expand the system to areas on the outer coast as the system at the Alaska Sea Life Center is expanded.

Most equipment needed to complete the contracted field research will be provided by the North Gulf Oceanic Society, including binoculars, nets, directional hydrophones, photographic equipment and biopsy equipment. Additional remote hydrophones, transmitters, receivers, and recorders will be purchased with matching monies. Additional supplies and minor equipment will be purchased as necessary. Apple Macintosh and IBM compatible computers owned by NGOS as well and the GIS system available at the Cook Inlet Keeper will be used for data storage.

C. Contracts and Other Agency Assistance

The entire project will be completed under the auspices of the North Gulf Oceanic Society. NGOS will provide a technician to enter data collected in 2000 into the GIS

database using the a preexisting menu interface. Acoustic analysis will be completed by Harold Jurk at the University of British Columbia. Monitoring the remote hydrophone system will be a cooperative project with the Alaska Sea Life Center. Contracts for vessel leases will be issued by the North Gulf Oceanic Society or the Society will use its own vessels for the project.

SCHEDULE

A. Measurable Project Tasks for FY2000

Oct 1-30 1998: Summarize monitoring fieldwork for FY99. Input data into GIS system.

Oct. 1 - Dec. 31: Analysis of photographs from 1999 fieldwork.

Oct. 1 - Dec. 31: Complete numerical and statistical analysis of pedigree and allele frequency data (begun in FY 98).

Oct. 1-Dec. 31: Acoustic analysis of killer whale calls from previous year.

Oct. 1- May 1: Continue publication process on acoustic separation of resident pods paper.

October 1- March 30: Continue winter recordings at Alaska Sea Life Center from remote hydrophone.

July -September: Killer whale monitoring emphasis field work. Monitor hydrophone from research vessel as possible.

The R.V.*Whale 2* will operate for 50 days in July August and September. The primary function of this vessel will be killer whale photoidentification monitoring. This time period is generally a period of high encounter rate with AB pod and other resident pods. A portion of the operational expense will be funded by matching monies. A small percentage of this field time may be used in other months if sighting reports indicate it would be advantageous.

B. Project Milestones and Endpoints

The FY2000 killer whale project will continue the reduced annual photoidentification monitoring program and the acoustic monitoring program initiated in FY1997. Future fieldwork will involve population monitoring and acoustic monitoring. Final definition of acoustic dialects and publication will be completed in FY2000 as well as publication of contaminant analysis results.

C. Completion Date

All phases of the project should be completed in FY2000 except for the ongoing limited monitoring and remote hydrophone projects.

PUBLICATIONS AND REPORTS

Jurk, H., E.L. Saulitis, and C.O. Matkin. Dialects of Prince William Sound resident killer whales. (Draft for Canadian Journal of Zoology)

Ylitalo, G, C.O. Matkin, J. Stein. Patterns in contaminant levels in Prince William Sound killer whales.

PROFESSIONAL CONFERENCES

The P.I., Craig Matkin, will attend the Society For Marine Mammalogy 13th Biennial Conference Maui, Hawaii that will run from November 28-December 3, 1999. He will present a paper detailing changes in pods/ groups of southern Alaska killer whales from 1984-1999. Lance Barrett-Lennard will also attend this conference and present a genetics paper but will obtain travel funds elsewhere.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

The monitoring of killer whales and analysis of historic and current data on killer whale behavior is part of an program to investigate killer whale recovery and the interactions of killer whales and harbor seals. It will be integrated with the harbor seal trophic studies (project 96064, Kathy Frost, project leader). In FY2000 this project will rely on approximately $8,000 in matching funds from foundations or other private sources. As a non-profit research institution familiar with private funding sources and cooperative programs, NGOS can work with the Trustee Council cooperation to maximize potential for matching funds in the future.

PROPOSED PRINCIPAL INVESTIGATOR:

Craig O. Matkin
North Gulf Oceanic Society
P.O. Box 15244, Homer, Alaska 99603
Phone/Fax (907) 235-6590
COMATKIN@xyz.net

Revision 7 -99
Approved TC 8-9-99

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel		$0.0						
Travel		$0.0						
Contractual		$77.5						
Commodities		$0.0						
Equipment		$0.0						
Subtotal	$0.0	$77.5			Estimated FY 2001	Estimated FY 2002		
General Administration		$5.4						
Project Total	$0.0	$82.9						
Full-time Equivalents (FTE)		0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

FY00

Prepared:

Project Number: 00012A-BAA
Project Title: Killer Whale Monitoring
Agency: NOAA

FORM 3A
TRUSTEE
AGENCY
SUMMARY

Revision 19-99

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1997 - September 30, 1998

Budget Category:	Authorized FY99	Proposed FY2000
Personnel		$30,390.0
Travel		$2,825.0
Contractual		$25,250.0
Commodities		$7,170.0
Equipment		$4,800.0
Subtotal	$0.0	$70,435.0
Indirect		$7,044.0
Project Total	$79,800.0	$77,479.0
Full-time Equivalents (FTE)		8.7
Other Resources		$8,000.0

LONG RANGE FUNDING REQUIREMENTS

	Estimated FY2001	Estimated FY2002	Estimated FY2003	Estimated	
	$80,000.0	$80,000.0	$80,000.0		

Dollar amounts are shown in thousands of dollars.

Comments:

2000

Prepared: April 1999

Project Number: 00012
Project Title: Killer Whale Monitoring
Name: North Gulf Oceanic Society

FORM 4A
Non-Trustee
SUMMARY

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1997 - September 30, 1998

Personnel Costs:			Months	Monthly		Proposed
Name	Position Description		Budgeted	Costs	Overtime	FY 1998
Craig O. Matkin	P.I. Field Biologist		3.0	4400.0		13,200.0
Graeme Ellis	Photo Analyst		1.0	3500.0		3,500.0
Eva Saulitis	Field Biologist		2.5	2800.0		7,000.0
	Field Assistant		0.7	1500.0		1,050.0
	Data entry technician		0.3	2800.0		840.0
	Acoustic Analyst		1.2	3400.0		4,800.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		8.7	18400.0	0.0	
					Personnel Total	$30,390.0

Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FY 1998
Homer/Vancouver (RT)		650.0	1	3	75.0	875.0
Homer/Hawaii		750.0	1	4	150.0	1,350.0
Homer/AnchorageRT		150	2	3	100.0	600.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
					Travel Total	$2,825.0

2000

Prepared:

Project Number: 00012
Project Title: Killer Whale Monitorng
Name: North Gulf Oceanic Society

FORM 4B
Personnel
& Travel
DETAIL

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1997 - September 30, 1998

Contractual Costs:	Proposed
Description	FY 1998
Hydrophone maintenance	2,000.0
27' research vessel (Whale 2) 50 days @ 420/day	21,000.0
Supply/Research Vessel 3 days @ 750/day	2,250.0
Contractual Total	$25,250.0

Commodities Costs:	Proposed
Description	FY 1998
Phone	280.0
Field Food ($16/person/day)	1,800.0
E-mail	120.0
Fuel	2,400.0
Film/Processing/Printing	1,600.0
Field Supplies	320.0
Deep Cycle batteries	180.0
Shipping	470.0
Commodities Total	$7,170.0

2000

Prepared:

Project Number: 00012
Project Title: Killer Whale Monitoring
Name: North Gulf Oceanic Society

FORM 4B
Contractual & Commodities DETAIL

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1997 - September 30, 1998

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 1998
Microwave transmission and reception equipment, wind generator (installed by Daniel Zatz)			4,800.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.	**New Equipment Total**		$4,800.0

Existing Equipment Usage: Description	Number of Units
	1
	1

2000

Prepared: 7/8/99

Project Number: 00012
Project Title: Killer Whale Monitoring
Name: North Gulf Oceanic Society

FORM 4B
Equipment
DETAIL

Approved TC 8-9-99

Mechanisms of Impact and Potential Recovery of Nearshore Vertebrate Predators (NVP)

Project Number:	00025-CLO
Restoration Category:	Research
Proposer:	L. Holland-Bartels/USGS-BRD, et al
Lead Trustee Agency:	DOI
Cooperating Agencies:	ADFG, NOAA
Alaska SeaLife Center:	No
New or Continued:	Cont'd
Duration:	6th yr. 6 yr. project
Cost FY 00:	$196.0
Cost FY 01:	$0.0
Cost FY 02:	$0.0
Geographic Area:	Prince William Sound
Injured Resource/Service:	Sea otter, river otter, harlequin duck, pigeon guillemot, intertidal and subtidal organisms

ABSTRACT

FY 00 will be dedicated to revising portions of the FY 99 final report for publication in peer reviewed journals. Nine manuscripts are slated to be published collectively and 13 additional manuscripts will be submitted to separate journals in FY 00. Funds will be used for responding to review comments, final analysis, and preparation of scientific journal articles. This six-year project is making 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.

INTRODUCTION

This 5-year project, *Mechanisms of Impact and Potential Recovery of Nearshore Vertebrate Predators* (NVP), was approved by the Trustees in March 1995 and began data collection in late summer, 1995. The project examines the status of recovery of four selected top vertebrate predators (sea otter, river otter, pigeon guillemot, and harlequin duck) in the nearshore environment of Prince William Sound (PWS) and is designed to better assess their recovery and determine mechanisms constraining that recovery.

Work completed in FY 95 and early FY 96 included completion of an extensive data management plan and a data archiving and file serving system to facilitate exchange and integration of project data among the fifteen project scientists. In those years, the sea otter, harlequin duck, and avian copredator components were initiated; however, primary focus was on pilot efforts to refine prey sampling strategies for further study. Full field seasons for sea otters, harlequin ducks, river otters and pigeon guillemots took place in FY96 and FY97. The original FY98 plan was to begin final data analysis and manuscript and final report writing and to conduct minimal field work as was necessary to finish some objectives for some components of the project. In response to January 1997 and 1998 peer reviewer comments, FY98 was a full field year for sea otters, pigeon guillemots, and invertebrates as indicators of sea otter recovery status. FY98 Funds that were to be used in data analysis and beginning report writing were required to address concerns of the peer reviewers. FY99 funds were used for final data analysis, a final meeting of P.I.'s, presentations at the 10th annual EVOS symposium, and writing of the Final Report. FY00 funds are requested for revising and preparing portions of the Final Report for publication in peer-reviewed scientific journals.

NEED FOR THE PROJECT

A. Statement of Problem

The nearshore marine ecosystem of PWS plays a critical role in the commercial, subsistence, and recreation economy of southcentral Alaska. Because of shorelines and coastal physiography, the nearshore ecosystem served as a repository for much of the oil spilled during the *Exxon Valdez* oil spill (EVOS). As a result, many of the injured resources under study by the EVOS Trustees Council are components of the nearshore system. Thus, the NVP study describes a research approach for assessing the biological and ecological significance of trophic issues and contaminants present in the nearshore environment. We focus on the status of system recovery and a suite of injured apex predators as indicators of environmental stress--the invertebrate feeding sea otter and harlequin duck, and fish feeding pigeon guillemot and river otter. NVP takes a multispecies, integrated approach to assess several potential key mechanisms constraining recovery of the nearshore system.

B. Rationale/Link to Restoration

Field efforts under NVP have addressed the question of recovery for four vertebrate predator species known to have been injured in the EVOS. For each species we asked "Is there evidence of recovery and if not, is it due to oil, food or demographic constraints?"

The final data analyses and writing of the Final Report for NVP are scheduled for completion in FY99. The synthesis of analyses of demographic, health and trophic parameters over the life of the project will result in a better understanding of processes in the nearshore environment. This, in turn, will also allow a better understanding of possibilities for restoration of these species. Publication in peer-reviewed journals

C. Location

This project was conducted in western Prince William Sound. For all four predator species, assessments were made at two areas, one oiled and one unoiled. Northern Knight Island was the oiled area for sea otter, river otter and harlequin duck assessments, and Naked Island was the oiled area for pigeon guillemots. Montague Island was the unoiled area for sea otter and harlequin duck assessments, whereas Jackpot Bay was the unoiled area for pigeon guillemots and river otters.

COMMUNITY INVOLVEMENT

A Traditional Ecological Knowledge workshop by members of the NVP team was held in Chenega Village in September, 1998. Gail Blundell, Tom Dean, Jim Bodkin, Henry Huntington and Dan Rosenberg met for one day with community members, providing presentations on the NVP studies on river otters, sea otters, invertebrates and harlequin ducks. There were discussions with community members on the spill effects and current status of resource recovery, from the community perspective. Information from this workshop will be included in the Final Report.

PROJECT DESIGN

A. Objectives

Objective 1. Revisions of Final Report and submission to selected peer-reviewed Journals.

Objective 2. Presentations to a professional conference.

B. Methods

Revisions to chapters of the Final Report for manuscript submission in FY 00 will be a combination of individual and collaborative efforts.

SCHEDULE

A. Measurable Project Tasks for FY 00

December 99	Submit manuscripts intended for feature article to peer-reviewed Journal
6 months after receipt of Trustee Council peer review comments	Complete revisions of Final Report
September 00	Revised journal submissions

B. Project Milestones and Endpoints

The endpoint of this project is scheduled for September 30, 2000.

C. Completion Date

September 30, 2000

PUBLICATIONS AND REPORTS

FY00 activities for NVP are directed at revising portions of the NVP Final Report for publication in peer-reviewed journals. We have identified 23 manuscripts to be published. The first 10 of these manuscripts are intended for publication collectively, as a feature in a peer-reviewed journal. The papers we propose will go through substantial internal and informal review before sending them out for formal reviews. We are working under the assumption that the final length of a collective feature will be between 60 and 80 journal pages. We propose an additional 13 manuscripts, derived from Appendices in the Final Report, for submission to separate journals during FY00.

NVP MANUSCRIPTS TARGETED FOR COLLECTIVE PUBLICATION IN FY00:

1. Status of recovery of the nearshore ecosystem of Prince William Sound, Alaska, ten years after the *Exxon Valdez* oil spill. L. Holland-Bartels et al.

2. Design of the Nearshore Vertebrate Predator Project. L. Holland-Bartels, L. McDonald, et al.

3. Evidence of injury, status of recovery, and factors limiting sea otter populations following the *Exxon Valdez* oil spill: Status of recovery of sea otters. J. Bodkin, T. Dean, D.H. Monson, B.E. Ballachey, S. Jewett, C. O'Clair, G. VanBlaricom

4. Recovery of sea otters in Prince William Sound following the *Exxon Valdez* oil spill: The role of food limitation. T.A. Dean, J.L. Bodkin, A. Fukuyama, S. Jewett, D. Monson, C. O'Clair, G. VanBlaricom, L. McDonald, B. Ballachey.

5. Evidence of injury, status of recovery, and factors limiting river otter populations following the *Exxon Valdez* oil spill. Status of recovery of River Otters. R.T. Bowyer, T. Dean, S. Jewett, J. Kern.

6. Evidence of injury, status of recovery, and factors limiting harlequin duck populations following the *Exxon Valdez* oil spill. D. Esler, T. Bowman, K. Trust, B. Ballachey, T. Dean, S. Jewett

7. Evidence of injury, status of recovery, and factors limiting pigeon guillemot populations following the *Exxon Valdez* oil spill. G.H. Golet, A.D. McGuire, P. Seiser, K.J Kuletz, , L. Duffy, D.B. Irons, D.D. Roby, T. Dean, S. Jewett, L. McDonald

8. Structuring of sea otter prey in Prince William Sound, Alaska. G. VanBlaricom, T. Dean, B. Ballachey, J. Bodkin, C. O'Clair, S. Jewett, A. Fukuyama, T. Gage, D. Munson

9. The use of biomarkers in evaluating the health status of populations exposed to environmental contaminants. B Ballachey, L. Holland-Bartels, J. Bodkin, G. Blundell, T. Dean, L. Duffy, D.Esler, G. Golet, S. Jewett, A. Rebar, P. Seiser, P. Snyder, J. Stegeman, K. Trust

10. Evaluating the recovery of ecosystems after environmental disasters: Lessons learned by the Nearshore Vertebrate Predator Project. L. Holland-Bartels et al.

NVP MANUSCRIPTS DERIVED FROM APPENDICES OF FINAL REPORT, TARGETED FOR SUBMISSION TO JOURNALS IN FY 00:

1. Meso-scale differences in mussel, *Mytilus trossulus,* population structure in Prince William Sound, Alaska in relation to oiling history and predation intensity. C. O'Clair and M. Lindeberg. To be published in Marine Ecology - Progress Series.

2. Long-term changes in mussel (*Mytilus trossulus*) abundance and growth at a heavily oiled bay in Prince William Sound, Alaska. M. Lindeberg, C. O'Clair and S. Saupe. To be published in Marine Biology.

3. Growth in the mussel, *Mytilus trossulus*, in Prince William Sound, Alaska: age-length and length-increment general models of the Schnute type compared. J. Millstein and C. O'Clair. To be published in J. Exp. Mar. Biol. Ecology

4. Testing assumptions for unbiased estimation of survival of radio-marked harlequin ducks. D. Esler, D. M. Mulcahy, and R. L. Jarvis.

5. Body composition and mass variation of molting harlequin ducks in Prince William Sound, Alaska. D. Esler and R. L. Jarvis.

6. Winter survival of adult female harlequin ducks in Prince William Sound, Alaska. D. Esler and R. L. Jarvis.

7. Variation in winter harlequin duck densities in Prince William Sound, Alaska: ecological influences and effects of the *Exxon Valdez* oil spill. T.D. Bowman, D. Esler, T. Dean, S. Jewett, C. Ó'Clair, and L. McDonald

8. Comparison of cytochrome P450 induction in sea ducks from oiled and unoiled areas of Prince William Sound, Alaska. K. D. Trust, K., D. Esler, J. Stegeman, B, Woodin, and M. Wolfe

9. Blood chemistry variation in harlequin ducks from Prince William Sound, Alaska. D.M. Mulcahy, D. Esler, B. Ballachey, L. Duffy, and A. Rebar

10. Cytochrome P4501A gene expression in sea otters: Quantitative polymerase chain reaction to measure CYP1A MRNA in peripheral blood mononuclear cells. P.W. Snyder et al. In Toxicological Science.

11. Comparison of Pigeon Guillemot, *Cepphus columba*, Blood parameters from oiled and unoiled areas of Alaska, Eight Years after the *Exxon Valdez* Oil Spill. P.E. Seiser, L.K. Duffy, A.D. McGuire, D. Roby, G. Golet, and M.A. Litzow

12. Inter-annual variability in the reproductive success of pigeon guillemots nesting on Jackpot Island, in southwestern Prince William Sound, Alaska, 1994-1998. P.E. Seiser, A.D. McGuire, D.D. Roby, and G. Golet

13. Comparison of spectrofluorometric and HPLC methods for the characterization of fecal porphyrin profiles in river otters of Prince William Sound, Alaska. C. Taylor, L.K. Duffy, F.G. Plumley, R.T. Bowyer. In Biomarkers.

PROFESSIONAL CONFERENCES

Multiple individual presentations by members of the NVP team are proposed for group presentation at one professional conference in FY00.

NORMAL AGENCY MANAGEMENT

The 1995 proposal was developed as a collaborative effort of a variety of research scientists from State, federal, university, and private centers under the facilitation of the U.S. Geological

Survey of the Department of Interior. The USGS has no management function or responsibilities but provides information for the management of DOI trust species as its primary mission. The NVP is a focused 5-year project to identify factors constraining recovery of selected species and provide additional tools to assess status. Upon completion, the developed tools can be transferred to the appropriate management agency for further implementation.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

Collaboration will continue as in previous years.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

The NVP project continues to follow the original detailed project description of 95025 submitted and approved March 1995.

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Revised 7-7-99
approved 8-9-99

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000	Proposed FY 00 Trustee Agency Totals					
			ADEC	ADF&G	ADNR	USFS	DOI	NOAA
				$22.3			$151.0	$22.8
Personnel	$201.5	$65.7						
Travel	$11.8	$2.5						
Contractual	$238.8	$107.9						
Commodities	$0.9	$2.5						
Equipment	$0.0		LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$453.0	$178.6			Estimated FY 2001	Estimated FY 2002		
General Administration	$47.0	$17.4						
Project Total	$500.0	$196.0			$0.0	$0.0		
Full-time Equivalents (FTE)	3.4	1.6						
	Dollar amounts are shown in thousands of dollars.							
Other Resources	$0.0	$0.0		$0.0	$0.0	$0.0		

Comments:

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Lead Agency: DOI: U.S. Geological Survey

FORM 2A
MULTI-TRUSTEE AGENCY SUMMARY

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000
Personnel	$160.5	$45.9
Travel	$10.0	$2.5
Contractual	$193.2	$87.1
Commodities	$0.9	$2.5
Equipment	$0.0	$0.0
Subtotal	$374.6	$138.0
General Administration	$37.6	$13.0
Project Total	$402.2	$151.0
Full-time Equivalents (FTE)	2.8	0.7
Other Resources		

LONG RANGE FUNDING REQUIREMENTS

		Estimated FY 2001	Estimated FY 2002		

Dollar amounts are shown in thousands of dollars.

Comments:
SO=sea otters
HD= harlequin ducks
CS=Chief Scientist
RO/PG=river otters/pigeon guillemots
SC=subtidal clams

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
U.S. Geological Survey

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 1999
SO: B. Ballachey	Wildlife Biolo s	GS-12	1.9	6.0		11.5
D. Monson	Wildlife Biologist	GS-9	2.8	4.1		11.5
HD: D.Esler	Wildlife Biologist	GS-12	3.4	6.0		20.4
CS: L. H-Bartels	Chief Scientist	GS-14	0.0	0.0		0.0
M Whalen	Data Manager, Graphics	GS-11	0.5	5.0		2.5
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		8.6	21.1	0.0	
					Personnel Total	$45.9

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 1999
CS: LaCrosse/ANC/LaCrosse	1.5	1	5	0.2	2.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$2.5

2.2E+51

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
U.S. Geological Survey

FORM 3B
Personnel
& Travel
DETAIL

Contractual Costs:	Proposed
Description	FY 1999
RO/PG: University of Alaska, Fairbanks Research Work Order	45.1
SC: University of Washington Research Work Order	6.9
HD: Oregon State University	0.0
CS: Statistical consulting	10.0
Contract with Coastal Resources Associates see form 4A&B for details	25.1
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$87.1

Commodities Costs:	Proposed
Description	FY 1999
	0.0
Publication and Printing costs	2.5
Commodities Total	$2.5

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
U.S. Geological Survey

FORM 3B
Contractual & Commodities
DETAIL

2000 EXXON VALDEZ TRU COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

New Equipment Purchases:	Number	Unit	Proposed
Description	of Units	Price	FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage:	Number	Inventory
Description	of Units	Agency

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
U.S. Geological Survey

FORM 3B
Equipment
DETAIL

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1998	Proposed FY 1999
Personnel	$0.0	$0.0
Travel	$0.0	$0.0
Contractual	$45.6	$20.8
Commodities	$0.0	$0.0
Equipment	$0.0	$0.0
Subtotal	$45.6	$20.8
General Administration	$3.2	$1.5
Project Total	$48.8	$22.3
Full-time Equivalents (FTE)		0.0
Other Resources		

LONG RANGE FUNDING REQUIREMENTS					
		Estimated FY 2001	Estimated FY 2002		

Dollar amounts are shown in thousands of dollars.

Comments:

Indirect cost based on 7% rate negotiated between ADF&G and the EVOS Trustees Council

See Forms 4a/b for linkage detail.

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Alaska Department of Fish and Game

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 1999
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		0.0	0.0	0.0	
					Personnel Total	$0.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 1999
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Agency: Alaska Department of Fish and Game

FORM 3B
Personnel
& Travel
DETAIL

Contractual Costs:	Proposed FY 2000
Description	
See Forms 4a/b for linkage detail.	20.8
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$20.8

Commodities Costs:	Proposed FY 1999
Description	
Commodities Total	$0.0

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Alaska Department of Fish and Game

FORM 3B
Contractual & Commodities DETAIL

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2000
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Alaska Department of Fish and Game

FORM 3B
Equipment
DETAIL

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 99	Proposed FY 1999
Personnel	$41.0	$19.8
Travel	$1.8	$0.0
Contractual		$0.0
Commodities		$0.0
Equipment		$0.0
Subtotal	$42.8	$19.8
General Administration	$6.2	$3.0
Project Total	$49.0	$22.8
Full-time Equivalents (FTE)		0.2

LONG RANGE FUNDING REQUIREMENTS

	Estimated FY 2000	Estimated FY 2001	Estimated FY 2002		

Dollar amounts are shown in thousands of dollars.

Other Resources								

Comments:

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
National Oceanic and Atmospheric Administration

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 00
C. O'Clair	Marine Biologist	GS-12	2.0	8.7		17.4
Lindeberg	Marine Biologist	GS11	0.5	4.7		2.4
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		2.5	13.4	0.0	
					Personnel Total	$19.8

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY00
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
National Oceanic and Atmospheric Administration

FORM 3B
Personnel
& Travel
DETAIL

Contractual Costs:	Proposed FY00
Description	
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed FY00
Description	
Commodities Total	$0.0

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
National Oceanic and Atmospheric Administration

FORM 3B
Contractual & Commodities DETAIL

New Equipment Purchases:	Number	Unit	Proposed
Description	of Units	Price	FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage:	Number	Inventory
Description	of Units	Agency

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
National Oceanic and Atmospheric Administration

FORM 3B
Equipment
DETAIL

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

	Authorized	Proposed FY00						
		$41.0						
		$0.0						
		$0.0						
		$0.0						
		$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$0.0	$41.0			Estimated FY 2001	Estimated FY 2002		
Indirect		$4.1						
Project Total	$0.0	$45.1						
FTE		0.2						
	Dollar amounts are shown in thousands of dollars.							

Indirect rate is 10% as per UAF/BRD agreement

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: University of Alaska, Fairbanks

FORM 4A
Non-Trustee
SUMMARY

7/7/99

2000 EXXON VALDEZ TRU COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Name	Position Description		Months Budgeted	Monthly Costs	Overtime	Proposed FY 00
T. Bowyer	Wildlife Biologist		1.0	12.8		12.8
L. Duffy	Physiologist		0.9	13.6		12.2
						0.0
						0.0
						0.0
MS fellowship(P. Seizer)						2.5
PHD fellowship(G. Blundell)						13.5
						0.0
						0.0
						0.0
						0.0
						0.0
		Subtotal	1.9	26.4	0.0	
					Personnel Total	$41.0

Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FY 00
					0.0
					0.0
					0.0
					0
					0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: University of Alaska, Fairbanks

FORM 4B
Personnel & Travel
DETAIL

	Proposed FY 00
Contractual Total	$0.0

	Proposed FY00
	0.0
	0.0
Commodities Total	$0.0

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: University of Alaska, Fairbanks

FORM 4B
Contractual & Commodities
DETAIL

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

	Number of Units	Unit Price	Proposed FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
New Equipment Total			$0.0

	Number of Units	

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: University of Alaska, Fairbanks

FORM 4B
Equipment
DETAIL

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

	Authorized FY99	Proposed FY00						
		$5.8						
		$0.0						
		$0.0						
		$0.2						
		$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$0.0	$6.0			Estimated FY 2001	Estimated FY 2002		
Indirect		$0.9						
Project Total	$0.0	$6.9						
FTE		0.2						
	Dollar amounts are shown in thousands of dollars.							

Indirect is 15% as per UW/BRD agreement

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: University of Washington, Seattle

FORM 4A
Non-Trustee
SUMMARY

7/7/99

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Name	Position Description		Months Budgeted	Monthly Costs	Overtime	Proposed FY 1999
A. Fukuyama	Ph.D. Research Assistant		2.1	1.8		3.8
Fukuyama Benefits						0.3
Fukuyama Tuition						1.7
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		2.1	1.8	0.0	
					Personnel Total	$5.8

Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FY 1999
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: University of Washington, Seattle

FORM 4B
Personnel
& Travel
DETAIL

	Proposed FY 1999
	0.0
	0.0
Contractual Total	$0.0

	Proposed FY 1999
telephone/fax/graphics/postage/photocopy	0.2
Commodities Total	$0.2

	Number of Units	Unit Price	Proposed FY00
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
New Equipment Total			$0.0

	Number of Units	

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: University of Washington, Seattle

FORM 4B
Equipment
DETAIL

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

	Authorized FY 1998	Proposed FY 1999						
		$12.8						
		$1.0						
		$0.0						
		$0.0						
		$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$0.0	$13.8			Estimated FY 2001	Estimated FY 2002		
Indirect		$11.3						
Project Total	$0.0	$25.1						
FTE		0.1						
	Dollar amounts are shown in thousands of dollars.							

Comments:

Indirect fee is sum of overhead (7.6K) and general and administrative costs (2.7K) + fee ($.96K)= $11.3K

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Name	Position Description		Months Budgeted	Monthly Costs	Overtime	Proposed FY 1999
T. Dean	Marine Biologist		1.5	8.1		12.2
D. Jung			0.2	3.7		0.7
			0.0	0.0		0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
		Subtotal	1.7	11.8	0.0	
					Personnel Total	$12.9

Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FY 1999
SD/ANC/SD	0.5	1	3	0.1	0.8
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.8

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: Coastal Resources Associates, Inc.
USGS-BRD contractor

FY 00

FORM 4B
Personnel
& Travel
DETAIL

7/7/99

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

	Proposed FY 1999
Contractual Total	$0.0

	Proposed FY 1999
Commodities Total	$0.0

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: Coastal Resources Associates, Inc.
USGS-BRD contractor

FY 00

FORM 4B
Contractual & Commodities
DETAIL

7/7/99

	Number of Units	Unit Price	Proposed FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
New Equipment Total			$0.0

	Number of Units	

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: Coastal Resources Associates, Inc.
USGS-BRD contractor

FY 00

FORM 4B
Equipment
DETAIL

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 99	Proposed FY00	LONG RANGE FUNDING REQUIREMENTS					
Personnel	$43.2	$16.6						
Travel		$0.0						
Contractual		$0.0						
Commodities		$0.0						
Equipment		$0.0						
Subtotal	$43.2				Estimated FY 2001	Estimated FY 2002		
General Administration	$8.3	$4.2						
Project Total	$51.5	$20.8						
Full-time Equivalents (FTE)		0.2						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

General Administration is calculated at 25% per the Trustee Council-UAF agreement.

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: Ak. Dept. Fish and Game Contractor-University of Alaska, Fairbanks

FORM 4A
Non-Trustee
SUMMARY

2000 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Name	Position Description		Months Budgeted	Monthly Costs	Overtime	Proposed FY 1999
Stephen Jewett	marine biologist	[redacted]	2.0	8.3		16.6
		Subtotal	2.0	8.3	0.0	
					Personnel Total	$16.6

Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FY 1999
		0			0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: AK. Dept. Fish and Game contractor- University of Alaska, Fairbanks

FORM 4B Personnel & Travel DETAIL

	Proposed FY 00
Contractual Total	$0.0

	Proposed FY 00
Commodities Total	$0.0

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: AK. Dept. Fish and Game contractor-University of Alaska, Fairbanks

FORM 4B
Contractual & Commodities DETAIL

	Number of Units	Unit Price	Proposed FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

	Number of Units	

FY 00

Project Number: 00025
Project Title: Mechanisms of Impact & Potential Recovery of Nearshore Vertebrate Predators
Name: AK. Dept. Fish and Game Contractor: University of Alaska, Fairbanks

FORM 4B
Equipment
DETAIL

Approved TC 8-9-99

Publication: Historical Analysis of Sockeye Salmon Growth Among Populations Affected by the Oil Spill and Large Spawning Escapements

Project Number:	00048-BAA
Restoration Category:	Research
Proposer:	G. Ruggerone/NRC, Inc., D. Rogers/Univ. Wash.
Lead Trustee Agency:	NOAA
Cooperating Agencies:	None
Alaska SeaLife Center:	No
New or Continued:	Cont'd
Duration:	2nd yr. 2 yr. project
Cost FY 00:	$10.3
Cost FY 01:	$0.0
Cost FY 02:	$0.0
Geographic Area:	Cook Inlet, Kodiak
Injured Resource/Service:	Sockeye salmon

ABSTRACT

Trustee Council funded research by Ruggerone and Rogers (Project 96048) demonstrated that large spawning escapements can have long-term impacts on sockeye growth and adult returns. The findings have new and important consequences for stock-recruitment modeling, which is the basis for determining escapement levels that allow for maximum sustained harvest. The research also demonstrated that marine growth of sockeye salmon increased after the mid-1970s, corresponding to the increase in salmon production throughout Alaska and the ocean regime shift that has impacted numerous species. This project will fund preparation of two manuscripts for publication in peer reviewed journals.

INTRODUCTION

Several sockeye salmon systems received exceptionally large spawning escapements as a result of the 1989 *Exxon Valdez* oil spill and management decisions to prohibit harvested of potentially contaminated salmon. Considerable concern was expressed regarding potentially adverse effects of the large escapements, including reduced growth of offspring, reduced survival, and lower production of adult salmon. However, few data were available in these systems prior to the oil spill for comparison to conditions after the spill.

Through EVOS funded research (Project 96048), we measured growth patterns of adult sockeye salmon scales to develop a historical index of sockeye growth during each life stage (freshwater and marine) for the period encompassing runs during 1970-1997 (1952-1997 for Chignik sockeye) (Ruggerone and Rogers 1998). Previous research had shown high correlation between scale growth and sockeye growth in freshwater.

The EVOS funded research led to the following conclusions:

- Large spawning escapements in 1989 led to reduced growth of offspring in the Kenai system, Akalura Lake (Kodiak), and Red Lake (Kodiak).
- The large escapements in 1989 affected growth up to 3 years post-spill.
- Large escapements affected growth of yearling sockeye from the 1988 brood, which co-inhabited the lakes with subyearlings from the 1989 brood.
- Although sockeye growth in the lakes recovered to historical levels, growth has been highly unstable following the oil spill
- Adult sockeye returns were correlated with freshwater growth
- The interaction between brood years has important consequences for stock-recruitment modeling
- Sockeye runs to Central Alaska during 1952-1997 were correlated with marine growth during first two years at sea for sockeye spending three years in the ocean. The marine growth pattern recorded on sockeye scales corresponds to the regime shift that occurred in the North Pacific Ocean during the mid-1970s (Rogers 1984, Beamish and Boullion 1993, Francis and Hare 1994) (see Figure 1).

The demonstration of interaction between adjacent sockeye year classes has important consequences for stock-recruitment modelling, which is the basis for estimating spawning escapement levels in Alaska. Interaction was demonstrated in the Kenai system, Red Lake, and Akalura Lake. The sockeye scale growth results are consistent with field studies conducted by the Alaska Department of Fish and Game in the Kenai River system. Interactions between adjacent brood years has not been previously demonstrated. Thus, stock-recruitment modelling should not only incorporate the parent spawning level, but it should also incorporate previous and subsequent spawning levels. This important finding was highlighted by Dr. Mundy during his presentation of fisheries projects funded by EVOS at the 1999 10-year anniversary conference in Anchorage.

A summary of the sockeye growth investigation funded by EVOS is attached.

STUDY PURPOSE

The purpose of the request for funds is to enable preparation of two manuscripts for publication in peer-reviewed journals. EVOS reviewers of the Restoration Report recommended that we publish the results of the investigation so that the results could be reached by a wider audience. Possible titles and journals for the manuscripts are:

Effects of Large Spawning Escapements on Growth and Adult Returns of Sockeye Salmon: Consequences for Salmon Management. North American Journal of Fisheries Management

Marine Growth and Adult Returns of Sockeye Salmon Reflect the mid-1970s North Pacific Ocean Regime Shift. Canadian Journal of Fisheries and Aquatic Sciences

NEED FOR THE PROJECT

The EVOS funded study conducted by Ruggerone and Rogers (1998) has significant implications for salmon management and also provides key information regarding marine conditions that affect long-term trends in salmon production in Alaska. Recent oceanographic changes and failed salmon runs in western Alaska suggest a new ocean regime may be developing. This study identifies a key variable (salmon growth during the early marine period) that reflects ocean condition. Without adequate funding to prepare manuscripts, these EVOS findings will not be made available to a wide audience that is provided by publication in scientific journals.

Study Location

The geographical areas that will be investigated include the Kenai River system in Cook Inlet, Red Lake and Akalura Lake on Kodiak Island, and Chignik and Black lakes on the Alaska Peninsula, and the North Pacific Ocean.

Cooperating Agencies

The proposed project is a continuation of project 96048, which was a joint effort between Natural Resources Consultants (NRC) and Fisheries Research Institute (FRI), University of Washington. ADF&G provided sockeye scales collected from the nine sockeye populations. ADF&G also shared biological data that was collected in the Kenai and Kodiak sockeye lakes.

The manuscripts have important consequences for sockeye management because they show spawning escapements can have long-term effects on growth and adult returns, a result that should be incorporated into stock-recruitment modelling. Further, the study found that the large increase in Alaska salmon production in Alaska was related to increased growth of sockeye salmon beginning in the mid-1970s.

SCHEDULE

Project Milestones and Endpoints

December 1999:	Submit papers for publication
September 2000:	Manuscripts published

Completion Date

September 2000

PROFESSIONAL CONFERENCES

Dr. Ruggerone presented results of this study at the 10 year anniversary *Exxon Valdez* oil spill conference in Anchorage during March 1999. He also presented the study during the 1998 *Exxon Valdez* restoration conference in 1998.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

This study is complementary to the overescapement studies conducted by ADF&G on Kenai River system, Akalura Lake, and Red Lake. Much of the information collected by these ADF&G projects were shared with NRC and incorporated into the synthesis of findings.

PRINCIPAL INVESTIGATORS

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University of Washington
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(206) 543-7628
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PERSONNEL

The manuscripts will be conducted by Dr. Gregory T. Ruggerone, Natural Resources Consultants, and Dr. Donald E. Rogers, Fisheries Research Institute, University of Washington. Both Ruggerone and Rogers have extensive first-hand experience with interpretations of scale measurements and have published several papers involving sockeye salmon scales, density-dependent growth at sea, and salmon abundance.

Dr. Gregory T. Ruggerone was the primary author of the EVOS study and he will prepare the manuscripts. He has published a number of manuscripts in peer-reviewed journals. He was Project Leader of the Alaska Salmon Program, University of Washington, during the late 1980s and early 1990s until becoming Vice-President of Natural Resources Consultants. He continues (since 1984) to manage research at the University of Washington's field station at Chignik. He assists the University of Washington with run size forecasts of Bristol Bay sockeye salmon. In the mid-1990s, he incorporated the brood year interaction term described in this sockeye growth study while estimating MSY escapement levels for Kenai River sockeye salmon.

approved 8-9-99

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel		$0.0						
Travel		$0.0						
Contractual		$9.6						
Commodities		$0.0						
Equipment		$0.0						
Subtotal	$0.0	$9.6			Estimated FY 2001	Estimated FY 2002		
General Administration		$0.7						
Project Total	$0.0	$10.3						
Full-time Equivalents (FTE)		0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

FY00

Prepared:

Project Number: 00048-BAA
Project Title: Historical Analysis of Sockeye Salmon Growth
Agency: NOAA

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000						
Personnel		$6.100						
Travel		$0.000						
Contractual		$1.000						
Commodities		$0.000						
Equipment		$0.000	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$0.0	$7.100			Estimated FY 2001	Estimated FY 2002		
Indirect		$2.540						
Project Total	$0.0	$9.640			$0.0	$0.0		
Full-time Equivalents (FTE)		0.1						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments: Indirect rates: NRC: 39.43% of personnel, 5% ofcontractual (publication charges) & Rogers, Rogers: 48.5% of total direct. Indirect costs include office rent and general operating expenses and project accounting and billing.
Indirect cost is 26.3% of project total.
Fringe benefits, such as FICA and health insurance, are included in the personnel rates of Ruggerone and Rogers.

FY00

Prepared: April 6, 1999

Project Number: 00048-BAA
Project Title: Historical Analysis of Sockeye Salmon Growth Among Populations Affected by the Exxon Valdez Oil Spill
Name: Natural Resources Consultants, Inc.

FORM 4A
Non-Trustee
SUMMARY

2000 EXXON VALDEZ TRUSTEE NCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:			Months	Monthly		Proposed
	Name	Position Description	Budgeted	Costs	Overtime	FY 2000
	G. Ruggerone, Ph.D.	Principal Investigator	0.60	8.66	0.0	5.196
						0.0
	D. Rogers, Ph.D.	Co-Principal Investigator	0.08	10.8	0.0	0.864
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
		Subtotal	0.7	19.5	0.0	
					Personnel Total	$6.1

Travel Costs: None		Ticket	Round	Total	Daily	Proposed
	Description	Price	Trips	Days	Per Diem	FY 2000
						0.0
	None					0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
					Travel Total	$0.0

FY00

Prepared: April 6, 1999

Project Number: 00048-BAA
Project Title: Historical Analysis of Sockeye Salmon Growth Among Populations Affected by the Exxon Valdez Oil Spill
Name: Natural Resources Consultants, Inc.

FORM 4B
Personnel
& Travel
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs: None Description	Proposed FY 2000
Publication page charges (estimated)	0.96
Contractual Total	$1.0

Commodities Costs: None Description	Proposed FY 2000
None	
Commodities Total	$0.0

FY00

Prepared: April 6, 1999

Project Number: 00048-BAA
Project Title: Historical Analysis of Sockeye Salmon Growth Among Populations Affected by the Exxon Valdez Oil Spill
Name: Natural Resources Consultants, Inc.

FORM 4B
Contractual & Commodities DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: None Description	Number of Units	Unit Price	Proposed FY 2000
None			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: None Description	Number of Units	
None		

FY00

Prepared: April 6, 1999

Project Number: 00048-BAA
Project Title: Historical Analysis of Sockeye Salmon Growth Among Populations Affected by the Exxon Valdez Oil Spill
Name: Natural Resources Consultants, Inc.

FORM 4B
Equipment
DETAIL

Revision 8-3-99
Approved TC 8-9-99

Project Title: Community Involvement/Traditional Ecological Knowledge

Project Number:	00052
Restoration Category:	General Restoration
Proposer:	Chugach Regional Resources Commission
Lead Trustee Agency:	Alaska Department of Fish & Game
Cooperating Agencies:	None
Duration:	6 Years
Cost FY00:	201.5
Cost FY01:	200.0
Cost FY02:	200.0
Geographic Area:	Spill Area Wide
Injured Resource/Service:	Subsistence

ABSTRACT

This project will increase community involvement in the restoration process. The Spill Area Wide Community Involvement Coordinator's work will continue through a contract with the Chugach Regional Resources Commission (CRRC). Through direct communication with a network of local facilitators, the Spill Area Wide Community Involvement Coordinator will continue to actively involve local residents in the restoration program (local facilitators are located in Tatitlek, Chenega Bay, Port Graham, Nanwalek, Cordova, Seward, Seldovia, Valdez, Kodiak, and the Alaska Peninsula). The project will start the process of integrating the duties of the Community Facilitator into the Tribal Natural Resource programs in five pilot project communities. This process will allow for possible EVOS Trustee Council participation in a regional stewardship program.

Two workshops will be held to assist in the planning for the stewardship program in preparation for the Gulf Ecosystem Monitoring program (GEM). The first workshop will be in Fall 1999 and will focus on bringing together natural resources managers from tribal organizations in Alaska and the nation together to present comprehensive information on their programs. This will allow tribes in the spill area to assess their needs and assets with respect to monitoring, stewardship, and research and the GEM. The second workshop will be held previous to the annual Restoration Workshop in January 2000. This workshop will bring together Community Facilitators, Natural Resource Specialists, EVOS researchers, and Trustee Council staff to dialogue and plan for community participation in the GEM. Additionally, pilot project communities will create a draft GEM Community Integration Plan that will discuss various ways that communities and the Trustee Council can set up a system by which meaningful participation in the GEM based upon. This document will focus on the communities of Tatitlek, Chenega Bay, Eyak, Port Graham, and Ouzinkie. Discussion will detail community interests in monitoring, research, community-based projects, and methods for which to best include communities throughout the life of the program.

INTRODUCTION

Ten local facilitators were hired in FY99 through cooperative agreements with the village councils of Tatitlek, Chenega Bay, Port Graham, Nanwalek, Eyak (Cordova), Ouzinkie, Qutekcak (Seward), Valdez, and the Chignik Lake Tribal Council. Hugh Short, the full-time Spill Area Wide Community Involvement

Coordinator, will continue his employment with CRRC to coordinate the project out of the Restoration office, to accomplish the following tasks:

1. Increase involvement of community members and local tribal traditional natural resource programs throughout the spill region in restoration projects. This community process will require a Community Facilitator, whose duties are described later.

2. Serve as contact point for the Community Facilitator and Natural Resource Specialist in each of ten participating communities (Tatitlek, Chenega Bay, Port Graham, Nanwalek, Cordova, Seward, Seldovia, Valdez, Ouzinkie, and Chignik Lake). The tasks for the Spill Area Wide Community Involvement Coordinator in relation to the Community Facilitators will be to:

   a. Once a month, fax a brief activities report to the Community Facilitators and Tribal Natural Resource Management programs to keep them informed of Trustee Council actions, Restoration Office activities, upcoming events, new research finding, and all other pertinent information. The report could take the form of bullets or a newsletter with contact information on each issue.

   b. Update the local resources inventories for each community (lodging and meeting space available for rent, boats and people available for hire, etc.). This information will be consolidated and available to all PI's. The Spill Area Wide Community Involvement Coordinator and Community Facilitators will then assist PIs in arranging use of these local resources.

   c. Coordinate the participation of the Community Facilitators in the annual restoration workshop, as well as two additional workshops. The first workshop will be in Fall 1999 and will focus on bringing together natural resources managers from tribal organizations in Alaska and the nation together to present comprehensive information on their programs. This will allow tribes in the spill area to assess their needs and assets with respect to monitoring, stewardship, and research and the GEM. The second workshop will be held previous to the annual Restoration Workshop in January 2000. This workshop will bring together community facilitators, natural resource specialists, EVOS researchers, and Trustee Council staff to dialogue and plan for community participation in the GEM.

   d. Work with the TEK Specialist to coordinate an annual review by Community Facilitators and village councils of restoration project proposals involving indigenous knowledge, and develop recommendations for the Executive Director.

3. Annually review the community involvement component of all restoration project proposals. Inform the Community Facilitators and/or Natural Resource Specialists of proposals that would involve their communities. Make recommendations to the Executive Director on the adequacy of, and ways to strengthen the community involvement components of specific proposals. Once funding decisions are made by the Trustee Council, initiate contact with the PIs to offer assistance in implementing their community involvement components.

4. Provide input at the Restoration Work Force meetings.

5. Provide input to the Restoration Update newsletter.

6. Provide a "community report" to the PAG at each of its meetings.

7. Assist in organizing Trustee Council/Restoration Office community meetings held in conjunction with the public input process of the GEM. This may include arranging presentations in specific communities.

8. Attend (in person or by teleconference) all Trustee Council meetings and report to the Community Facilitators on actions taken.

9. Work with the Science Coordinator, Communications Specialist, and TEK Specialist to get research results to communities.

10. Coordinate the provision of technical assistance to the villages by the Trustee Council staff and agency personnel to develop project proposals.

11. Prepare quarterly project status reports and ensure all annual/final reports are submitted on a timely basis by the affected communities.

12. Work with Community Facilitators to achieve meaningful community participation in the GEM planning process.

13. Work with Community Facilitators to develop a draft GEM Community Integration Plan.

The specific tasks the Community Facilitators are expected to undertake include the following:

1. Inform the Spill Area Wide Coordinator of community issues, concerns, or questions regarding restoration. These issues could be identified through community meetings conducted by the Community Facilitators, or through other means, and could include ideas for new projects.

2. Assist the Spill Area Wide Coordinator with increasing community involvement in restoration projects. This will include assisting community members who are interested and able to work on the EVOS Trustee Council funded projects to gain employment. Areas of expertise range anywhere from skiff and other equipment availability, general laborers, and interviewers, to research assistants, guides, and traditional wisdom holders.

3. Work with the Spill Area Wide Coordinator in coordinating Trustee Council community meetings as well as community visits from project PIs. The Community Facilitator will also serve as the initial contact in the village for any project conducted in the traditional use areas of the communities.

4. The Community Facilitators are responsible for ensuring that the protocols and guidelines developed in FY96 are strictly adhered to by all parties involved in the Trustee Council funded project.

5. Work closely with the village council's tribal traditional natural resource program to coordinate all activities that have a direct impact the local community resources and any research projects that will complement the tribe's traditional knowledge of the traditional use areas.

6. Disseminate to community members the monthly update from the Spill Area Wide Coordinator.

7. All Community Facilitators shall attend the annual Restoration Workshop and associated meetings, including certain scientific review sessions. Non-pilot project communities will be strongly encouraged to attend the two workshops regarding stewardship and natural resource programs. These communities may be asked to perform pilot project duties in future years.

8. Assist in identifying injured species on which TEK should be collected.

9. Conduct interviews with local traditional wisdom holders under the supervision of the Spill Area Wide Coordinator and the TEK Specialist.

10. Provide a quarterly report to the Spill Area Wide Coordinator identifying community issues, concerns, or questions regarding restoration. These issues could be identified through community meetings or other means and should include relevant issues discussed at village council meetings. Ideas for new projects should also be included.

Pilot project Community Facilitators will complete the above duties in addition to the duties listed below.

1. Attend and contribute to the two workshops to be held in the fall and winter FY00. The first workshop will be in Fall 1999 and will focus on bringing together natural resources managers from tribal organizations in Alaska and the nation together to present comprehensive information on their programs. This will allow tribes in the spill area to assess their needs and assets with respect to monitoring, stewardship, and research and the GEM. The second workshop will be held previous to the annual Restoration Workshop in January 2000. This workshop will bring together community facilitators, natural resource specialists, EVOS researchers, and Trustee Council staff to dialogue and plan for community participation in the GEM.

2. Work with the Spill Area Wide Coordinator, TEK Specialist, Natural Resource Specialist, and other involved parties to draft a GEM Community Integration Plan.

3. Work with their tribal council and community to identify species of subsistence importance to conduct population assessments and monitoring programs.

The specific tasks for the Traditional Ecological Knowledge Specialist will be to:

1. Assist in the preparation of the two workshops to be held in fall in winter. This includes all aspects of planning.

2. Provide technical assistance to pilot project communities regarding the development and integration into the GEM through a draft GEM Community Integration Plan.

NEED FOR THE PROJECT

A. Statement of Problem

The *Exxon Valdez* oil spill caused severe disruption of the lives of many people living in the spill impacted area. The spill also caused residents of the area to be concerned about the safety of their wild food sources, and the integrity of the surrounding natural environment. While scientific studies aimed at restoring the resources and services damaged by the oil spill have occurred throughout the spill area, most of the researcher work for agencies or institutions based in Anchorage, Fairbanks, or outside Alaska. Residents have voiced concern over a lack of involvement by spill area communities in the restoration efforts, and incomplete communication to spill area inhabitants of study proposals and results. While the past several years have facilitated an increasing amount of communication between the scientists and the communities, there still exists a void for meaningful involvement in the restoration process by the community members at the grass roots level. At the same time, researchers have recognized that local residents have traditional knowledge that could help them answer questions they have not been able to answer through conventional scientific means.

In addition, communities in the spill area are very concerned about the long-term stewardship and management of lands and resources important to the subsistence way of life. These communities have been planning to form natural resource management programs at the local level to ensure long term health of injured oil spill species, important subsistence resources, and responsible management of lands in proximity to their villages and traditional use area.

B. Rationale

This project furthers the Trustee Council's goals of facilitating the involvement of spill area residents and resource users in the restoration process. It also reaffirms the Trustee Council's dedication to the involvement of people living in the oil spill affected areas in the restoration process. In addition, people living in the spill area have detailed knowledge about the condition of resources, which can significantly add to data collected as part of scientific studies, and enhance the success of restoration efforts. Local people have expressed a desire to be involved in all aspects of restoration projects, and a willingness to work with researchers.

Village councils are currently developing their own natural resource use plans with the assistance of CRRC, and any outside activities need to be incorporated into those plans. This project would assist with the effort to ensure the long term health and restoration of injured species and lands from the oil spill.

C. Location

This project will be spill area wide. All communities will have a Community Facilitator within their community, with the exception of the Alaska Peninsula and Kodiak, which will be covered by a region-wide Community Facilitator. Five communities will be pilot project communities. These include Tatitlek, Eyak, Port Graham, Nanwalek, and Ouzinkie. Valdez, Chenega Bay, Alaska Peninsula, Qutekcak, and Seldovia will continue to perform their normal Community Facilitator duties.

The project's benefits will be realized both in the communities involved and in the restoration of the injured resources. Better communication among the Trustee Council staff, researchers, and residents of the communities impacted by the spill should improve the effectiveness of restoration efforts.

COMMUNITY INVOLVEMENT

The core of this project is community involvement.

PROJECT DESIGN

A. Objectives

The objectives of the project will be to:

1. Increase the meaningful involvement of spill area communities in the restoration efforts of the Trustee Council;

2. Improve the communication of findings and results of restoration efforts to spill area village councils and inhabitants and the appropriate regional organizations. It is expected that by doing so, this project will increase the effectiveness of overall restoration efforts; and

3. Develop a means by which western science and traditional wisdom can be compiled and utilized in a cooperative manner with the intent of furthering the restoration process in a way that is sensitive to the needs of the affected communities.

4. To work with the local natural resource management programs that focus on the stewardship and management of injured resources and lands.

B. Methods

The Spill Area-Wide Coordinator hired through a contract with the Chugach Regional Resources Commission, the local Community Facilitators, in close coordination with the Tribal Natural Resource Programs, will implement the project.

The objectives will be achieved using the following methods:

1. A contract will be renewed by ADF&G Subsistence Division to CRRC for overall coordination of the Community Facilitators and Spill Area-Wide Coordinator. The contractor will be expected to arrange for the hiring (where applicable) and coordination of local facilitators in the communities of Chenega Bay, Tatitlek, Port Graham, Nanwalek, Cordova, Seward, Valdez, Seldovia, and regional coordinators for the Kodiak Island and Alaska Peninsula regions.

2. Working with the Community Facilitators, the Spill Area-Wide Coordinator will identify those projects funded by the Trustee Council for which a community outreach component would be appropriate, and will work with the principal investigators of those projects to design and implement community outreach components. The goal of community outreach will be to continue the partnership begun under 95052 between the people of the oil spill region and scientific researchers. Outreach will include communication of traditional knowledge and local interests, as well as communication of research proposals and study results. Outreach and community interest in the Gulf Ecosystem Monitoring program (GEM) will be a large effort of the Spill Area Wide Coordinator.

3. A new initiative for this program will be the integration of the Tribal Natural Resource Programs into the Community Involvement Program through the support of Pilot Stewardship Programs in five

communities (Tatitlek, Nanwalek, Ouzinkie, Port Graham, and Eyak). These communities have existing Tribal Natural Resource Programs in place and are willing to integrate the community facilitator responsibilities into this program. The remaining communities will continue their normal functions, but at a reduced level. They will be encouraged to develop Tribal natural resource programs in their individual communities and be asked to participate in the training provided through this and other projects.

a) Hold two workshops in the fall and winter FY00. The first workshop will bring existing program directors of natural resource programs to discuss their organization with pilot project Community Facilitators and Natural Resource Specialists. Non-pilot project Community Facilitator will be strongly urged to attend. This will allow communities the opportunity to implement programs that will optimize the stewardship and good management of injured resources and lands. The second workshop will bring PI's, Natural Resource Specialists, Community Facilitators (both pilot and non-pilot), and other involved parties together to discuss collaboration in the GEM. This will include long term monitoring and research. The possible formation of a Community Science Committee may be an outcome of this workshop.

b) Pilot-project Community Facilitators will start talk with adjacent landowners about long-term stewardship of lands of village and traditional use. This will include stewardship and management programs to benefits all users.

c) Pilot-project Community Facilitators and Natural Resource Specialists will work to identify injured species of community interest to develop population and monitoring programs at the local level.

d) Continued work to integrate their traditional knowledge into the GEM and annual restoration program. Huntington will assist with technical and logistical help.

The effectiveness of the project will be evaluated on an annual basis, by the Trustee Council staff working in cooperation with the Spill Area-Wide Coordinator, and the communities in the oil spill region.

C. Contracts and Other Agency Assistance

A contract will be let to CRRC for overall coordination of a facilitator network through a Spill Area-Wide Coordinator. The contractor will be expected to arrange for the hiring and coordination of local facilitators in the communities of Chenega Bay, Tatitlek, Port Graham, Nanwalek, Cordova, Seward, Valdez, Seldovia, and regional coordinators for the Kodiak Island and Alaska Peninsula regions. However, all other communities in the oil spill impacted area will also be included in outreach efforts, even though a local facilitator will not be hired in each community.

These tasks are being contracted out for the following reasons:

1) The use of a regional organization as opposed to a state agency would better serve the needs of the local community members.

2) The Trustee Council has encouraged contracting tasks out to the private sector as much as possible, and as appropriate

3) The state procurement system makes it difficult to contract directly with the communities in the oil spill region. It has proven to be simpler to contract out the coordination of the facilitator network on a sole source basis with CRRC, who has an established working relationship with the communities.

D. Completion Date

Since the objective of this project is to integrate the local communities into the restoration program, we see a need to continue this program until the spill restoration project is complete. The project should be evaluated on a yearly basis to determine how it can best serve the needs of the Trustee Council and the local communities.

SCHEDULE

A. Measurable Project Tasks for FY97

October 1, 1999	Contract with CRRC and ADF&G Renewed
October 1, 1999	SAWCIC continues CRRC employment
October 1, 1999	Subcontracts with Communities for Community Facilitators developed or renewed
October 1-31, 1999	MOU renewed between ADF&G & CRRC
October to March 2000	Work with Trustee Council to disseminate and receive feedback on GEM plan
October 1999 to Sept. 2000	Identification of species for TEK to develop population and monitoring programs and data collection
October 1999 to Sept. 2000	Pilot project Community Facilitators to begin talking with landholders adjacent to villages regarding stewardship and management programs.
October 1999 to Sept. 2000	Huntington and Short to assist with the formation of the draft GEM Community Integration Plan
October 1999 to Sept. 2000	Develop GEM Community Integration Plan for presentation in September 2000 in pilot project communities
November, 1999	Natural Resource Training Workshop for Community Facilitators/Natural Resource Specialists (both pilot and non-pilot)
Nov. 1 - Dec. 31, 1999	Preparation for annual Restoration Workshop
Nov., 1999	Coordinate development of new projects w/ communities
January, 2000	Participate in annual Restoration Workshop
January, 2000	Natural Resource Training Workshop for Community Facilitators/Natural Resource Specialists, PI's
March-April, 2000	Work with communities to develop and/or write proposals for FY98 work plan
March-April, 2000	Work with communities to compile final reports
Ongoing	Provide ongoing technical assistance to Facilitators
Ongoing	Work with communities who are not under the pilot program to encourage them to develop natural resource programs at the tribal level

B. Project Milestone and Endpoints

The project should be continued as long as there are significant restoration efforts underway. The project should be evaluated on a yearly basis to determine the most efficient way to continue to keep the communities involved in the Trustee Council Restoration Program.

C. Project Reports

Annual reports will be compiled in coordination with the ADF&G and provided each year by CRRC on April 15th, describing and summarizing the progress made during the previous federal fiscal year. In addition, monthly reports will be provided to the participating communities by the Spill Area-Wide Coordinator.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

This community outreach effort is in fact a novel effort to coordinate the Restoration Program with the local residents and builds on the established relationship between CRRC and the communities in Prince William Sound.

CRRC is contributing a considerable amount of in-kind services to the project. CRRC's tribal traditional natural resource program development project has been operating for the past two years in four of the villages in the Chugach Region, and Ouzinkie. CRRC, through a BIA contract, is providing a total of $36,800 in salaries and fringe for four natural resource specialists to be hired at the local level. Technical assistance is being provided by CRRC as well as the Native American Fish & Wildlife Society to provide training and technical assistance at the local level. Part of the normal duties of the Natural Resource Specialists will be to collect traditional harvest and other baseline data (such as population assessments) on the resources in their traditional use areas. This information can then be incorporated into the TEK portion of the project. It has been suggested to the communities that the Community Facilitators also serve as the Natural Resource Specialists to aid in maximizing the available funds.

ENVIRONMENTAL COMPLIANCE

This project is categorically excluded under NEPA guidelines.

PERSONNEL

Patty Brown-Schwalenberg: Ms. Brown is the Executive Director of the Chugach Regional Resources Commission (CRRC). She has worked for the past 17 years in such positions as Tribal Administrator for her tribe, the Lac du Flambeau Band of Lake Superior Chippewa Indians, Society Administrator for the Native American Fish & Wildlife Society, Office Manager of the Bering Sea Fisheries Development Fund, and as a private consultant, assisting Alaska Native communities in obtaining funding for natural resource management programs, and setting up their natural resource program administrative systems. CRRC and the previous organizations that Ms. Brown has operated have consistently met all standards of proper management, including annual program and financial audits.

Hugh Short: CRRC will continue to employ Hugh Short as the Spill Area-Wide Community Involvement Coordinator for this project. Hugh has been active in spill area issues for the past two years and has developed an excellent working relationship with people at the community level and the principal investigators. He will be instrumental in working with the communities at developing the training

workshops as well as assisting the villages in developing their own natural resource stewardship programs.

Dr. Henry Huntington: CRRC has contracted with Huntington to serve as a TEK Specialist. Dr. Huntington received his Ph.D. at the University of Cambridge (U.K.), Scott Polar Research Institute in Polar Studies. He has served as the Environmental Coordinator for the Inuit Circumpolar Conference (ICC), coordinating ICC policy regarding the Arctic Environmental Protection Strategy (AEPS), in cooperation with indigenous organizations in Russia and Scandinavia. He was also responsible for traditional ecological knowledge and other research projects under the auspices of the AEPS.

Revision 1/26/99
Approved TC 8-9-99

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000
Personnel		$0.0
Travel		$0.0
Contractual		$188.3
Commodities		$0.0
Equipment		$0.0
Subtotal	$0.0	$188.3
General Administration		$13.2
Project Total	$0.0	$201.5
Full-time Equivalents (FTE)		0.0
Other Resources		

LONG RANGE FUNDING REQUIREMENTS

		Estimated FY 2001	Estimated FY 2002		
		$200.0	$200.0		

Dollar amounts are shown in thousands of dollars.

Comments:

FY00

Prepared: 4-12-99

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 2000
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		0.0		0.0	
					Personnel Total	$0.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 2000
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY00

Prepared: 4-12-99

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 3B
Personnel
& Travel
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FY 2000
Contract with Chugach Regional Resources Commission	188.3
	0.0
	0.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$188.3

Commodities Costs:	Proposed
Description	FY 2000
Commodities Total	$0.0

FY00

Prepared: 4-12-99

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 3B
Contractual & Commodities DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2000
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY00

Prepared: 12-99

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 3B
Equipment
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000						
Personnel		$50.0						
Travel		$20.6						
Contractual		$97.0						
Commodities		$2.0						
Equipment		$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$0.0	$169.6			Estimated FY 2001	Estimated FY 2002		
Indirect		$18.7						
Project Total	$0.0	$188.3			$190.0	$190.0		
Full-time Equivalents (FTE)		1.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

FY00

Prepared:

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 4A
Non-Trustee
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:			Months	Monthly		Proposed
	Name	Position Description	Budgeted	Costs	Overtime	FY 2000
	Hugh Short	Community Involvement Coordinator	12.0	4.1	0.0	50.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
		Subtotal	12.0	4.1	0.0	
					Personnel Total	$50.0

Travel Costs:		Ticket	Round	Total	Daily	Proposed
	Description	Price	Trips	Days	Per Diem	FY 2000
	Port Graham - Anchorage	0.2	2	8	0.1	1.2
	Tatitlek - Anchorage	0.5	2	8	0.1	1.8
	Chenega Bay - Anchorage	0.5	2	8	0.1	1.8
	Seldovia - Anchorage	0.3	2	8	0.1	1.4
	Nanwalek - Anchorage	0.2	2	8	0.1	1.2
	Seward - Anchorage	0.2	2	8	0.1	1.2
	Cordova - Anchorage	0.3	2	8	0.1	1.4
	Valdez - Anchorage	0.2	2	8	0.1	1.2
	Ouzinkie - Anchorage	0.7	2	8	0.1	2.2
	Chignik Lake - Anchorage	0.7	2	8	0.1	2.2
	TEK Specialist/Community Involvement Coordinator travel throughout					5.0
	spill area					0.0
					Travel Total	$20.6

FY00

Prepared:

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 4B
Personnel
& Travel
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FY 2000
TEK Specialist	18.0
Sub-contracts with tribal councils in spill area (5 at $9,000 and 5 at $6,000) to provide facilitator and stewardship services	75.0
Contracts with four speakers for technical assistant at Stewardship Conference	4.0
Contractual Total	$97.0

Commodities Costs:	Proposed
Description	FY 2000
Incidental costs for Stewardship Conference (meeting space rental, supplies, food, etc.)	2.0
Commodities Total	$2.0

FY00

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 4B
Contractual & Commodities DETAIL

Prepared:

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2000
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	

FY00

Project Number: 00052
Project Title: Community Involvement/Traditional Ecological Knowledge
Agency: Alaska Department of Fish and Game

FORM 4B
Equipment
DETAIL

Prepared:

approved TC 8-9-99

Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in Prince William Sound

Project Number:	00064-CLO
Restoration Category:	Research, Monitoring
Proposer:	K. Frost/ADFG
Lead Trustee Agency:	ADFG
Cooperating Agencies:	None
Alaska SeaLife Center:	No
New or Continued:	Cont'd
Duration:	6th yr. 6 yr. project
Cost FY 00:	$129.4
Cost FY 01:	$0.0
Cost FY 02:	$0.0
Geographic Area:	Prince William Sound
Injured Resource/Service:	Harbor seals

ABSTRACT

This project is the final year of an effort to monitor the status of harbor seals in Prince William Sound and investigate the hypothesis that food limitation to pups and juveniles has caused the ongoing decline. Aerial surveys will be conducted during molting to determine whether the population continues to decline, stabilizes, or increases. Trend analysis using Bayesian statistics will be completed and a manuscript submitted for publication. No additional field work other than the aerial surveys will be conducted. Fatty acids analysis will be conducted on blubber samples collected during Summer 1999, and development of mathematical models will be continued to estimate seal diets and whether they have changed both within the 1990s and since the 1970s.

INTRODUCTION

The *Exxon Valdez* oil spill (EVOS) occurred in Prince William Sound (PWS) in March 1989. Because harbor seals (*Phoca vitulina richardsi*) and their haulouts became oiled by the spill, harbor seal studies began almost immediately as part of the Natural Resources Damage Assessment (NRDA) program. These NRDA studies were conducted by the Alaska Department of Fish and Game (ADF&G), and included aerial surveys to quantify mortality and necropsies to document levels of hydrocarbons and tissue damage in oiled seals. Based on these investigations, it was estimated that more than 300 harbor seals (36% of the seals in oiled areas) died in PWS following the EVOS. As NRDA studies progressed, it also became clear that the harbor seal population throughout PWS was declining and had been doing so since at least 1984. Therefore, beginning in 1991 as NRDA studies neared completion, the Trustee Council funded a harbor seal restoration study in which ADF&G continued to monitor the trend of harbor seals in PWS and began to investigate the causes of the ongoing decline. These early restoration studies addressed a broad array of possible causes for the decline including disease, predation, human-caused mortality, reproduction, and food limitation.

Marine mammals and seabirds are apex predators in ecosystems in which fishes and cephalopods are important prey. As such, a strong relationship would be expected between predator populations and the abundance of fish stocks. This relationship is likely to be influenced by factors such as commercial fisheries and ecosystem changes (e.g., Beddington, et al. 1985; Springer 1993). In many parts of the world pinniped populations have increased as predicted after protection from over-exploitation (e.g., Olesiuk, et al. 1990; Shelton et al. 1995). However, large declines in populations of harbor seals and Steller sea lions (*Eumetopias jubatus*) have been documented in the Bering Sea and the GOA, including PWS (Pitcher 1990; Loughlin, et al. 1992). These declines occurred despite implementation of the 1972 Marine Mammal Protection Act (MMPA) which ended commercial hunting for pups and bounty payments for adults. Likewise, since the 1970's numerous species of seabirds have also declined in PWS. These unanticipated declines have prompted monitoring and assessment of marine mammal, seabird, and fish population trends, and perhaps most importantly, have furthered the idea of using predators as samplers of forage fish abundance (Duffy 1996; Roseneau and Byrd 1996). The latter aspect may provide the most useful information towards addressing the question of "Is it food?", since the mean abundance of prey at large spatial scales, as determined from fisheries surveys, may not be relevant to the scale at which seals and seabirds forage (e.g., Duffy 1996; NRC 1996).

In PWS, harbor seals are one of the most abundant and widely distributed marine mammals, hauling out and/or breeding at more than 50 sites. Since 1984 harbor seal numbers in PWS have declined by about 60%, with only part of this decline attributable to the 1989 *Exxon Valdez* oil spill (EVOS) (Frost and Lowry 1994a, Frost et al. 1994). The decline in harbor seals has not been limited to PWS, but has also occurred in adjacent parts of the GOA (Pitcher 1990). A change in the trophic structure of the ecosystem, and hence the availability of prey, is among the hypothesized causes for this observed decline, as well as that of other apex predators. Thus, understanding the diet of harbor seals and how they may depend on seasonal or area-specific concentrations of prey is not only needed in the management of harbor seals as a resource, but because harbor seals may also act as important indicators of other marine resources.

Recently, the use of fatty acid signature analysis (Iverson 1993) has been proposed to study marine food webs and pinniped diets (Iverson 1995). Fatty acids are the largest constituent of lipids and those of carbon chain length 14 or greater are often deposited in animal tissue with minimal modification from diet. Lipids in the marine food web are exceptionally complex and diverse. Owing to various restrictions and specificities in the biosynthesis and modification of fatty acids among different taxonomic groups (e.g., Paradis & Ackman 1976; Ackman 1980; Cook 1985; Fraser et al. 1989), many components appear which can be traced to a general or even specific ecological origin. Certain "indicator" fatty acids (Iverson 1993) exist which are particularly useful in food web studies since they can arise only or mostly from the diet. Although methods of fatty acid signature analysis are still being developed, the technique has been used both to identify general trophic level of diets and to detect major and minor shifts in diet within populations (Iverson, Arnould & Boyd 1997; Smith, Iverson & Bowen 1997).

This harbor seal restoration study conducted in PWS during 1994-1998 is one of the two most comprehensive ecosystem studies ever conducted using fatty acids signature analysis (Iverson, Frost & Lowry, 1997; Iverson, Bowen & Ackman, unpublished data), and has come the farthest in advancing the development of this method. In the first four years of study in PWS, fatty acid signatures have indicated that fine-scale structure of foraging distribution of harbor seals can be discerned, and that this is due not only to localized feeding patterns in seals, but also to specific differences in prey species with size and location or habitat within PWS (Iverson, Frost & Lowry, 1997). From this initial work, it was also possible to make inferences about predominant prey species in the diet of individual seals. Since harbor seals are likely to adjust their foraging patterns to changes in abundance of local prey (Olesiuk 1993; Tollit & Thompson 1996), this suggests that determining diets or changes in diets of harbor seals over time using fatty acid signatures may provide clues not only to changes in foraging patterns, but also to differences in local prey availability, predominant species size classes, and species abundance at the spatial and temporal scales that are essential to the nutrition of individual animals. It has been proposed that one cause for the decline in some Alaskan pinniped populations may have been a change in community structure over time that resulted in an ecosystem dominated by large predatory pollock, thus making small forage fish less available to pinnipeds, especially juveniles (NRC 1996). Thus, the ability to detect relationships between and within predators and prey on a small spatial scale indicates that fatty acid signature analysis could begin to address such hypotheses.

Since the inception of this restoration study, the focus has continued to narrow and tighten. As other possible causes for the decline (for example disease and poor pup production) appear less likely, the focus has shifted increasingly to the question "Is it food?" Initially we addressed this question relative to adult and subadult segments of the population. More recently, we have begun to focus on pups.

Since 1994, we have collected samples from 224 PWS harbor seals for stable isotope, blubber energy, blood chemistry, genetics, and fatty acids analyses. Morphometric measurements, ultrasound, and measurements of bioimpedence were also obtained from many of these seals. This included 36 seals in 1994, 42 in 1995, 39 in 1996,50 in 1997, and 57 in 1999. In addition, more than 60 blubber samples have been obtained from subsistence hunters as part of an EVOS-funded biosampling program. These samples have been analyzed by a variety of investigators in a multi-disciplinary approach to the question of whether food is limiting the recovery of harbor

seals. Stable isotope results are reported by Schell and Hirons as part of EVOS Restoration Project 170 and blood chemistry and blubber energy results by Castellini et al. as part of EVOS Restoration Project 001. As part of our study, we have addressed the food limitation hypothesis through satellite-tagging and fatty acids analysis. New methods for both of these approaches were developed by this restoration project.

Satellite-tags have provided information about locations, movements, and diving of seals, which is helping us to identify feeding areas and understand feeding behavior (Frost et al. 1996, 1997, 1998). To date, 71 harbor seals have been successfully instrumented with satellite-linked depth recorders (SDRs), including 26 adults (11 males, 15 females), 23 subadults (12 males, 11 females), and 22 pups (15 females, 7 males) (Table 1). Twenty-two of these were tagged in April- May, 29 in September, and 20 of the 22 pups immediately following weaning in late June-early July.

Satellite-tagging data clearly indicate substantial individual variation in the way seals make their livings (Frost and Lowry 1994b; Frost et al. 1995, 1996, 1997, 1998). Some tagged seals used only a few haulouts and made only short trips away from them to feed. Others made longer trips of several days to almost two weeks. Some of these feeding trips were apparently entirely within PWS and others were in the GOA. Movements between terrestrial haulouts in central PWS and glaciers in northern PWS were not uncommon. Analysis of data from newly weaned pups tagged in 1997 and 1998 suggests that their movements are generally similar to those of adults. Contrary to expectations, pups did not appear to move farther or show less site fidelity than adults. Analysis of diving behavior of adults and subadults indicated that some seals made consistently shallow dives, while others fed in deeper waters and dove to greater depths. The deepest dive by a tagged seal was 404 m, but most dives were to less than 200 m. In general, seals dove more and hauled out less in the winter. They spent a greater proportion of days hauled out in summer, and used more haulout sites during this period. This is the period when pupping, breeding, and molting occur.

Over the six years of this study, there appears to have been a change in the feeding behavior of seals during winter. None of 6 seals tagged in September 1993 and only 2 of 8 tagged in September 1994 left PWS. All three adult females tagged in fall 1994 spent the entire winter in PWS. In contrast, 12 of 15 seals tagged in September 1995-1996 made winter-spring feeding trips outside PWS. Of the 5 adult females, 4 moved to the Copper River Delta in March, suggesting that food resources found there in spring may be important to pregnant females. These feeding trips outside PWS occurred primarily during winter and spring, and most were to the Copper River Delta. Only 3 of 22 seals tagged in April/May left PWS. Two of these were adults that went to the GOA in May and returned to PWS by June. One small subadult spent parts of May-July in the Copper River Delta. None of the pups we tagged made trips to the Copper River Delta/ Fatty acids data also show a change in the diets of PWS harbor seals between 1994-1995 and 1996-1997. Diets of both adults and subadults in 1998 appeared to more similar to 1994-1995 than to 1996-1997.

The SDR data set for 71 harbor seals from PWS is one of the largest of its kind. It is especially valuable because ADF&G has similar SDR data from an additional 70 harbor seals instrumented in SEAK and near Kodiak as part of the NOAA-funded harbor seal study (Swain et al. 1996).

When the information from these two data sets are synthesized, it will represent the most complete body of information about harbor seal movements and diving/feeding behavior anywhere in the world.

The sample size of satellite-tagged adult and subadult males and females in PWS is now sufficient to generally characterize the movements and diving behavior of these age groups of seals. Additionally, after the 1999 field season we will have tagged 29 seal pups. Small 0.25-watt SDRs developed and tested in 1996-1997 now allow us to safely instrument small seals. Consequently, our emphasis in 1997-1999 shifted to the tagging of newly-weaned pups. Additionally, in 1999, we will have the opportunity to tag approximately 10 yearling harbor seals with prototype location-only tags provided to this project at no cost. This will provide us with a well-rounded picture of overall movement patterns of all age groups of PWS harbor seals.

Fatty acids analysis in PWS harbor seals and their prey was initially funded by the EVOS Trustee Council starting in 1994 as a pilot project. Early results were published in Marine Ecology Progress Series (Iverson, Frost & Lowry, 1997). In that initial study, fatty acid signatures were used to investigate the diet and spatial scales of foraging in harbor seals and selected prey in PWS and the GOA (Iverson, Frost & Lowry, 1997). Since then, many additional blubber samples and prey have been analyzed. To date, blubber samples collected from 381 harbor seals from PWS, Kodiak Island, and SEAK in the mid to late 1990s have been analyzed for fatty acid composition. In addition, during 1998 we analyzed archived blubber from an additional 286 harbor seals sampled in the 1970s in PWS and the GOA, bringing the total to 667 seals. A total of 1052 potential prey samples representing 22 taxa have also been analyzed for total fat content and fatty acid composition. Classification and regression tree analysis was used to classify seals and prey according to their fatty acid signatures. We continue to find large differences in the fatty acid composition of blubber from seals sampled at Kodiak, SEAK and PWS. Annual differences in diet are evident, as are age and gender-related differences. Diets in the 1970s were found to be substantially more diverse than diets in the 1990s. Additionally, fatty acid signatures distinguished seals from different regions within PWS, as well as from haulout sites only a few kilometers apart. These findings suggested that seals forage very site-specifically.

Prey fatty acid patterns also differed on similarly small spatial scales within PWS. Not only could prey species such as herring and pollock be differentiated from one another using fatty acid signatures, but they could also be distinguished by size-class and location within PWS, reflecting differences in diet with age as well as with fine-scale habitat. Fatty acids analysis indicated that juvenile seals sampled in northern PWS fed only on herring from that region, whereas older seals ate herring from a variety of locations. Results from this study were consistent with both satellite data from tagged harbor seals and stomach content analyses of forage fish species in PWS.

Efforts to date to mathematically model the diets of seals suggest that medium and large herring and squid dominate the diets of older seals in southcentral PWS. Pink salmon and squid, fairly common in adult diets, were not eaten by juveniles. This is consistent with information about prey distribution and abundance in PWS and historical information about harbor seal diets. The modeling exercise is still in the developmental phase and will continue to be refined and improved in the future. However, it is already clear that fatty acid signature analysis will be an important contribution to understanding marine food webs in PWS and other marine environments. Perhaps

its greatest potential is that it integrates diet over time and allows us to identify, not every individual prey that was eaten, but instead the key prey species that have contributed most to fat reservoirs, and therefore nutritional status (and probably survival) of these seals.

During FY 99, the objectives of the harbor seal restoration study addressed six hypotheses regarding the status and trends of harbor seals in PWS, possible causes for the ongoing population decline, and the nutritional status of PWS harbor seals. The status of studies relative to these hypotheses is very briefly summarized below.

Hypothesis 1: The PWS harbor seal population has stabilized and/or increased since the EVOS. Annual counts of seals at 25 standardized "trend count" haulout sites in PWS have been made since the oil spill in 1989. From 1990-1998, surveys showed a decline of about 2.5% per year. The rate has slowed in the last few years. Counts that had been adjusted for the effects of tide, date, and time of survey were 13% higher in 1998 than in 1997, 18% lower than in 1990, and 57% lower than in 1984. The results of these analyses will appear in the journal Marine Mammal Science in April 1999 (Frost et al. 1999).

Hypothesis 2: Juvenile harbor seals are particularly sensitive to characteristics of prey abundance such as depth, prey size, and prey type. Prey changes in PWS have resulted in food limitation, poorer body condition, and therefore reduced survival of juvenile seals. During 1997 and 1998, total body composition (fat, protein, lean body mass) of pups, yearlings, and subadults was measured using isotope dilution with deuterium oxide (D_20). Average fat content in 1997 was 43% for pups, 23% for yearlings, and 18%-20% for other subadults. In 1998, pups averaged 3 kg smaller and had 3% less fat. Yearlings and two-year-olds were also smaller in 1998 than in 1997, but their average fat content was 4%-5% greater. In both years, PWS pups averaged 3-7 kg heavier than harbor seal pups form Sable Island, and PWS yearlings had twice the fat content of Sable Island yearlings. This suggests that PWS pups and yearlings were adequately nourished - much better than expected - in 1997 and 1998, but that there were clear annual differences in condition. It is interesting that the diets in 1997 and 1998, as indicated by fatty acids, were different than in the two previous and the following years. We currently have no means of assessing survival of juveniles.

Hypothesis 3: The diets of PWS and other declining populations of harbor seals differ from diets of harbor seals in areas where populations are stable. Fatty acid signature analysis has been conducted on blubber of 381 harbor seals from PWS, southeast Alaska, Yakutat, and the Kodiak area collected in the 1990s. In general, southeast Alaska seals were clearly distinguished from Kodiak and Yakutat seals and most similar to seals from northern PWS. Southern PWS seals were quite similar to those from Kodiak. This was not surprising since satellite tagging data indicated that some southern PWS seals made regular feeding trips to the northern Gulf of Alaska. Diets in southeast and northern PWS were generally more diverse than those in other areas. Although we have been able to identify geographic differences in prey base, we have not yet been able to determine whether and how these differences might affect nutritional status.

Fatty acid signature analysis indicates clear annual differences in diet for all regions. Diets in PWS were quite different in 1994, 1995 and 1998 than they were in 1996 and 1997. Fatty acids

analysis of samples from SEA and Kodiak for 1995 and 1996 indicated a substantial change in diet from one year to the next.

Hypothesis 4: The diets of harbor seals have changed over the past few decades, reflecting a change in the distribution and abundance of important forage fishes. Archived blubber samples from 286 harbor seals collected in the 1970s in PWS and the GOA were analyzed during the last year. Fatty acid signatures of these blubber samples indicated that diets of both adults and subadults in the 1970s were substantially different than diets in the 1990s. Annual differences during 1994-1998 were far less than the interdecadal differences. In general, diets in the 1970s were more diverse, and included more shrimp, octopus, sandlance and squid than diets in the 1990s. A subsample of fatty acids data from Kodiak in the 1970s indicated that flatfish, herring, smelt, sandlance, octopus, shrimp, and squid made up most of the diet. Stomach contents data also indicated that these same species were eaten.

Hypothesis 5: The diet composition of harbor seals in areas of population decline reflect differences or changes in the relative distribution and abundance of prey important to various demographic groups. As part of a Master of Science graduate thesis project, Ms. Tracey Gotthardt is collecting information on recent and historical distribution and abundance of forage fishes in PWS and the northern Gulf of Alaska. She is synthesizing forage fish data layers by compiling a literature/data search of the most recent forage fish studies in PWS. Forage fish distribution data acquired from ADF&G, APEX and SEA have been entered into a GIS database to provide maps for use in spatial analysis of species distribution in PWS. This synthesis of forage fish information will be used to coarsely depict year round distributions of fish and particularly to identify "hot spots" and describe species distribution on a seasonal basis.

Ms. Gotthardt is also analyzing seal diving and movement data for 14 seals satellite-tagged near Montague Island. Location data have been entered into a GIS database and seals tracked through time to determine the range of foraging trips, and any patterns in spatial and temporal distribution. She is currently examining spatial and temporal co-occurrences of seals and fish in an attempt to describe harbor seal distribution and movements in relation to their prey base.

During 1995, large concentrations of young-of-the-year pollock dominated the forage fish complex in central PWS. Fatty acids analysis of blubber from seals sampled in this area in 1995 indicated that pollock was a component of the diet. In 1996, herring replaced these young pollock as the dominant forage fish and, not surprisingly, fatty acid signatures also indicated that herring was a major prey of harbor seals that year.

Ms. Gotthardt is nearing completion of her thesis. She anticipates that her thesis will be completed and defended during FY 99.

Hypothesis 6: Harbor seal pups and juveniles spend more of their time foraging to obtain adequate nutrition than do adults; pups in PWS spend more time foraging than pups in other areas where the population is not declining. Twelve post-weaning harbor seal pups from PWS were instrumented with SDRs in 1997, and an additional 8 in 1998. As of April 1999, three of the pups tagged in 1998 were still transmitting, and all were within PWS. Preliminary analysis of dive data indicates that pups and non-pups spend similar amounts of time diving during, and that

seasonal patterns in amount of time spent diving were generally similar for all ages. Pups did not make obviously more or longer feeding trips, nor did they show less site fidelity than adults. ADF&G, as part of the NOAA-funded harbor seal study, also tagged newly-weaned harbor seal pups on Tugidak Island in the northern GOA in summer 1997 and again in 1998. In the future, comparisons will be made among PWS pups tagged in different years, and between PWS pups and pups tagged on Tugidak.

Proposed work in 1999. During the 1999 field season, satellite tagging, sampling, and monitoring will continue. Research will focus on the hypothesis that the availability of food, particularly to pups and subadults, is limiting the harbor seal population. Aerial surveys will be flown to monitor trends during the molting period in 1999. We plan to attach satellite transmitters to 7 harbor seal pups in 1999 to assist with the interpretation of dietary information provided by fatty acid analysis, and to identify areas used by newly weaned pups for feeding. Satellite-tagging will also provide information about dispersal of pups after weaning, and whether or not they leave PWS. Body fat content of 20-30 pups and yearlings will be determined using D_2O. Blood, blubber, skin, and measurements will be taken from all seals that are caught during tagging operations regardless of age. Similar samples are being collected by ADF&G in SEAK, where harbor seals are not declining, and in the Kodiak region where they have declined more than 90% since the mid-1970s, but may now be increasing, as part of the NOAA-funded harbor seal project. Data will be compared to better understand why seals are doing well in some areas and declining in others. In addition to the above work, it is likely that we will have the opportunity to attach 10 prototype location-only satellite tags to harbor seal yearlings in PWS in 1999. These tags, worth over $20,000, will be provided to the project at no cost in exchange for evaluation of their performance.

Work proposed in 2000 and beyond. The work being proposed for 1999-2000 will focus on analysis of field studies and data analysis undertaken since the inception of this project.

We will conduct aerial surveys to monitor the trend of harbor seals in PWS during 2000. These surveys are relatively inexpensive to conduct, and since the population trend for PWS harbor seals is still unclear, we think it is important to continue a monitoring program. During 2000, we will finalize our analysis of survey data using hierarchical Bayes models that relate observed seal count to a number of covariates (including location). Recommendations regarding future trend monitoring will be made after this hierarchical Bayes analysis has been completed.

Data collected from the 51 adult and subadult seals satellite tagged during 1992-1996, as well as the 27 pups instrumented in 1997 -1999, will be thoroughly analyzed. This project is well underway. A manuscript describing diving behavior of non-pup seals is currently in preparation.

Fatty acid studies will be continued through the next year. Additional samples of a few select prey species will be analyzed to fill in missing locations or age classes and to enable an examination of annual variability in fatty acid signatures. We will analyze blubber samples from seals that we catch in summer 1999, as well as from subsistence caught seals and seals caught by the ADF&G-NOAA harbor seal study. Particular emphasis will be on modeling work to provide actual estimates of diet composition based on fatty acids signature.

NEED FOR THE PROJECT

A. Statement of Problem

From 1984-1988, harbor seal counts at 25 trend sites in PWS declined by 43% due to unknown causes. The decline continued in 1989, aggravated in oiled areas by the EVOS. Counts of seals at oiled trend count sites declined by 45%, compared to 11% at unoiled sites. More than 300 harbor seals (36% of those in oiled areas) were estimated to have died in PWS due to the spill.

Since 1990, numbers have continued to decline. The rate of decline from 1990-1998 was about 2.4% per year. There were 18% fewer seals in 1998 than in 1990, and 57% fewer than in 1984. The reasons for the decline remain unknown, but may relate to food limitation. It appears that the decline has slowed in recent years and the PWS harbor seal population may, in fact, be starting to stabilize. Future surveys will be required to confirm this.

B. Rationale

Harbor seals are important to residents of PWS for subsistence. In 1985-1989, harbor seals made up 13%-27% of the subsistence foods harvested in Tatitlek and Chenega Bay. During 1992-1995, these two villages harvested less than half the number harvested annually before the spill. Native residents have noted the scarcity of seals and the impact this has had on subsistence hunting. Harbor seals are also watched and photographed by tourists and recreational users of PWS, and they interact with and are incidentally killed by commercial fisheries.

Like all marine mammals, harbor seals have special federal protection under the Marine Mammal Protection Act. Because of the ongoing decline, it is essential that current population data be available so that inappropriate restrictions on human activities are not implemented. It is important to understand what factors are limiting the population. We cannot assume, given the ongoing decline, that the number of seals in oiled areas will return naturally to pre-spill levels. It is necessary to continue monitoring trends, identify and appropriately manage areas of particular biological significance, and communicate information on population status to subsistence hunters and fishermen in order to minimize mortality and augment recovery in any way possible. Commercial fisheries in PWS may face greater restrictions designed to reduce incidental take of harbor seals unless something can be done to understand and reverse the population decline.

The ongoing decline of harbor seals began over two decades ago in the Kodiak area, and was detected at least a decade ago in PWS. Although periodic surveys have documented the downward trends and are useful for determining whether the recovery objective of "stable or increasing population trends" has been met, they are not adequate for determining what is causing the seal population to decline, or for designing conservation and management measures to facilitate recovery and ensure the future health of the population. Unless research is specifically designed and conducted to investigate the factors limiting harbor seals, it is likely that little progress will be made in understanding and mitigating the decline. This is a difficult but important topic to investigate. It requires a multidisciplinary approach that incorporates an understanding of

harbor seal behavior, habitat use, and energetic, with data about the distribution, abundance, and biology of prey species and predators.

C. Location

This project will be conducted in PWS. Aerial surveys will be flown over the 25 established trend count sites listed in Table 1. Seal tagging and sampling has taken place at a variety of locations throughout PWS. Pup tagging locations have been chosen based on our ability to catch seals, to represent different habitats, and on the existence of previous tagging data for adult and subadult seals, to facilitate comparisons. Comparative data will be obtained by other ADF&G harbor seal studies near Kodiak and in SEAK.

Communities that harvest harbor seals or engage in commercial fishing activities, and may be affected by or utilize results of this study, include Cordova, Chenega Bay, Tatitlek, and Valdez.

COMMUNITY INVOLVEMENT

"Harbor Seal Updates" have been produced and distributed to PWS subsistence hunters and other interested persons in PWS communities in previous years, depending on the availability of new and pertinent information. The Principal Investigator participated in the Elder Youth Conference in Cordova during August 1998.

Information from this study will be presented at oil spill symposia, planning workshops, conferences, and in the published literature. Information will be provided to the University of Alaska Sea Grant program and ADF&G Division of Subsistence for use in meetings and discussions with PWS subsistence hunters regarding the biosampling program. ADF&G marine mammals staff regularly attend meetings with various public groups (tourism industry, fisheries, conservation groups, subsistence communities) to inform them about status, important conservation issues, and key research needs for harbor seals.

Project investigators will cooperate with personnel from the ADF&G Division of Subsistence in their efforts to inform residents of Chenega Bay, Tatitlek, Valdez, and Cordova about the findings of this study and to incorporate the suggestions of PWS residents in study design. Such an exchange of information will allow biologists to benefit from residents' observations about abundance and behavior of harbor seals in PWS, and will help residents to make informed decisions about their annual harvest of harbor seals.

When invited, investigators will continue to attend meetings of the ANHSC to discuss study results and proposed research. Investigators will assist as requested in developing community-based sampling programs. Biosampling is a cooperative effort of the ANHSC, NMFS, the University of Alaska Sea Grant program, and the ADF&G Division of Subsistence. Personnel from this harbor seal project will facilitate sample analysis and communication of results to community residents.

PROJECT DESIGN

A. Objectives

These are the objectives for this project during the last 2-5 years. During the next fiscal year this project will focus on data analysis and preparation of reports and manuscripts that will address these objectives.

1. Monitor the abundance and trends of harbor seals at trend count sites in oiled and unoiled areas of PWS to determine whether the PWS harbor seal population has declined, stabilized, or increased since the EVOS.

2. Recommend a schedule for continued aerial survey monitoring based on observed trend and statistical characteristics of survey data.

3. Identify important prey species in the diets of harbor seals in PWS, with a particular emphasis on pups and yearlings, and determine whether there are dietary differences among different components of the population.

4. In conjunction with research efforts being done on the Scotian Shelf, develop mathematical models and associated software programs to quantitatively estimate species composition of individual harbor seal diets.

5. Determine whether there are differences in diets and important prey species among populations of harbor seals in areas of the Gulf of Alaska where they are continuing to decline (e.g., PWS and northern GOA) and areas where the population is stable or increasing (SEAK).

6. Determine whether changes in harbor seal diets and important prey species have occurred over the past two decades.

7. Compare estimates of abundance and importance of harbor seal prey to trawl survey data and data obtained from seabird diet studies being conducted concurrently under the APEX program.

8. Determine foraging range and diving behavior of harbor seal pups and juveniles and compare to similar information for other age groups.

9. Provide information to subsistence hunters so they can make informed decisions about the appropriate level of harvest for harbor seals.

B. Methods

The following hypotheses were developed for FY 98 - FY 00 for this harbor seal study to meet the above objectives. (General progress to date relative to these hypotheses was described in the Introduction of this annual report.).

Hypothesis 1: The PWS harbor seal population has stabilized and/or increased since the EVOS.

1. Conduct aerial surveys at PWS trend sites during molting in 2000;
2. Re-analyze survey data using hierarchical Bayes models and develop estimates of the annual number of observed seals.
3. Develop hierarchical Bayes models that relate observed seal count to a number of covariates, including location, calendar day, time, height of low tide, time of low tide, qualitative assessments of wind and sky conditions, and trends for each site.
4. Develop a hierarchical Bayes approach to trend monitoring by combining trends among sites, taking into account the covariates.
5. Reevaluate survey data collected since 1989 using hierarchical Bayes methods to evaluate whether seal numbers are continuing to decline, have stabilized, or are recovering to pre-spill levels.

Hypothesis 2: Juvenile harbor seals are particularly sensitive to characteristics of prey abundance such as depth, prey size, and prey type. Prey changes in PWS have resulted in food limitation, poorer body condition, and therefore reduced survival of juvenile seals.

1. Obtain blood and blubber samples from pups, subadult and adult harbor seals in PWS during two time periods: a) in late June/early July, representing the diets of pups about 2 weeks post-weaning (and therefore of their mothers) and the first over-winter diets for yearling harbor seals, and b) in August/September, a time when pups have lost blubber stores obtained from milk fat consumed during suckling and have begun to forage on their own, and also a time representing the summer diets of other age groups.
2. Analyze blubber samples for fatty acid signatures of individuals and age groups.
3. Measure total body composition (fat, protein, and lean body mass) of pups and juveniles using D_20 equilibration as an indicator of individual nutritional status.
4. Use fatty acids signature analysis to determine whether individual, age-related, and interannual differences in diets occur in harbor seals; use this information to examine whether seals from different areas appear to have different diets because of differing prey intake with location or because of different age-group composition.
5. Continue to assess variation in the fat content and fatty acid composition of prey species in PWS, but with a particular emphasis on characterizing size-class and regional differences in the four prey species that are likely of most importance to harbor seals and especially juveniles: herring (*Clupea pallasi*), pollock (*Theragra chalcogramma*), capelin (*Mallotus villosus*), and sandlance (*Ammodytes hexapterus*).
6. Assemble the entire database being gathered in PWS on the fatty acid signatures of predators and prey and, together with a cooperating Scotian Shelf research program, develop mathematical models and associated software programs to quantitatively estimate species and size-class composition of individual harbor seal diets.
7. Estimate the most important prey items (and size classes) in diets of different demographic groups of harbor seals and determine whether diets of pups and small subadults differ significantly from diets of large subadults and adults and relate this to data obtained previously on characteristics and limits of dive depths in pups, subadults, and adults.

Hypothesis 3: The diets of PWS and other declining populations of harbor seals differ from diets of harbor seals in areas where populations are stable, reflecting differences in the distribution and abundance of important forage fishes at relevant scales.

1. Obtain blood and blubber samples at similar time periods as in Hypothesis 2.1 from similar demographic groups of harbor seal populations, in another area of decline (Kodiak) and an area of stability (SEAK).
2. Analyze blubber samples for fatty acid signatures of individuals and age groups.
3. Determine whether diets of pups, subadults and adult harbor seals differ between PWS, Kodiak, and SEAK using fatty acid signatures.
5. Assess variation in the fat content and fatty acid composition of prey species that are likely to be of importance to harbor seals in Kodiak and SEAK, in cooperation with other ADF&G harbor seal studies.
6. Using mathematical models developed (Hypothesis 2.7), estimate the diet of the differing demographic groups among the differing regions and determine whether juveniles appear to be less constrained by prey availability in SEAK versus Kodiak and PWS.

Hypothesis 4: The diets of harbor seals have changed over the past few decades, reflecting a change in the distribution and abundance of important forage fishes.

1. Archived blubber samples collected in the 1970s from Kodiak and in the late 1980s from PWS are available for analysis and have been successfully tested for their ability to be cleanly analyzed for fatty acid signatures. These samples will be analyzed for fatty acid signatures of individuals and age groups.
2. Using data on prey species fatty acid signatures (and accounting for any annual variability in these signatures), the species composition of diets of archived samples will be estimated using the developed mathematical models.
3. Compare estimated diets of seals collected in the 1970s with diets in the 1990s.

Hypothesis 5: The diet composition of harbor seals in areas of population decline reflect differences or changes in the relative distribution and abundance of prey important to various demographic groups.

1. Target PWS prey collection to areas both where seals are sampled and to where other work is being done on prey and/or seabirds under the APEX program.
2. Compare size-class and regional differences within prey species, especially herring and pollock, to data from stomach content analysis of these prey (APEX).
3. Compare and combine estimates of abundance and importance of harbor seal prey to trawl survey data (APEX).
4. Assess whether fish species important to juvenile seals, such as capelin and sandlance, are limited in areas where harbor seals are declining, as determined through data obtained from seabird diet studies being conducted concurrently under the APEX program.

Hypothesis 6. Harbor seal pups and juveniles spend more of their time foraging to obtain adequate nutrition than do adults; pups in PWS spend more time foraging than pups in other areas where the population is not declining.

1. Compare dive data from seal pups satellite tagged in PWS with data from subadult and adult seals tagged in the PWS.

2. Compare dive data from seal pups satellite tagged in PWS with data from pups tagged in other areas of Alaska (northern GOA and/or SEAK).
3. Assess the annual variability in the foraging behavior of satellite-tagged seal pups.

The final year of field study with take place in 1999, with final data analysis and reporting to take place in 2000. In particular, we expect to prepare reports and manuscripts on the subjects of : 1) movements of satellite-tagged harbor seals in PWS (non-pups); 2) diving behavior of PWS harbor seals (non-pups); 3) fatty acids of the prey base in PWS; 4) modeling fatty acid signatures to estimate diet composition; 4) modeling harbor seal population dynamics to evaluate the role of food limitation in population declines; 5) application of Bayesian statistics to harbor seal monitoring; 6) condition and diet of PWS harbor seal pups.

Aerial Surveys and Analysis (to be done in 2000)

Harbor seal abundance will be monitored by flying aerial surveys during the molting period in mid to late August. A fixed-wing aircraft will be used to survey 25 trend count sites at an altitude of 700-1000 ft. These haulout sites have been used by ADF&G for PWS harbor seal trend counts since 1983, including NRDA and Restoration studies in 1989-1996 (Calkins and Pitcher 1984; Pitcher 1986, 1989; Frost and Lowry 1994a; Frost et al. 1994a; Frost et. al 1995; Frost et. al 1996). The trend count route includes 7 sites that were impacted by the EVOS (Agnes, Storey, Little Smith, Big Smith, Seal, and Green islands, and Applegate Rocks) and 18 unoiled sites (Table 2). The survey methodology and observers will be the same as those used in PWS harbor seal studies conducted in 1989-1998 (Frost et. al. 1996, 1997, 1998), and as summarized below.

Maximum numbers of harbor seals are known to haul out during pupping and molting (Pitcher and Calkins 1979; Calambokidis et al. 1987). Within these periods, more animals are usually hauled out at lower stages of the tide, since availability of many haulout sites is limited by tidal stage. Our surveys will be conducted during mid to late August (molting), and will begin within two hours before daylight low tides and finish within two hours after low tide. Multiple counts will be made at each site to allow statistical analysis of trend. As part of NOAA-funded harbor seal studies, aerial photographs will be taken of harbor seals hauled out on ice near the Columbia Glacier during mid-August in conjunction with our regular surveys. This will be a test program to determine suitability of several photogrametric techniques for counting seals on glacial ice.

Power analysis of data from 1989-1994 indicated that in order to detect a 5% increase per year over a five year period ($p=0.05$) with a greater than 80% probability of being right (using initial population = 767, the number of seals at trend count sites in 1994), it is necessary to fly annual surveys during the molting period, with at least 7 replicates per year, and to adjust them for the effects of time of day, date, and tide. This analysis was based on data collected by ADF&G during 1984-1994, and took advantage of one of the most extensive data sets of its kind. The recommendation of 7 or more replicates is similar to the number of replicates recommended by Pitcher based on analysis of other harbor seal surveys in Alaska (Pitcher 1986, 1989). The number of replicates also may be influenced by weather, which can limit the number of days suitable for flying within a survey period.

Aerial surveys do not estimate the total number of seals present since they do not account for seals that are in the water or seals hauled out at locations not on the trend count route. Surveys provide indices of abundance based on the number of hauled out seals. Interpretation of trend count surveys relies on the assumption that counts of harbor seals on select haulout sites are valid linear indices of local abundance. We assume that within a given biological window, such as the molting period, hauling out behavior remains the same from one year to the next, and counts can thus be compared (e.g., Harvey 1987, Pitcher 1989). Standardization of procedures minimizes, but cannot eliminate, the effects of variables such as tide and weather that could influence the number of seals hauled out on a given day. Consequently, there may be considerable variation in daily counts, despite our attempts to standardize conditions. As part of this project during 1994-1996, we developed multivariate analyses to correct counts for weather, tide, and date (Frost et al. 1999). However, even this approach may not adequately estimate the variance associated with corrected counts.

The current models for trend-monitoring use Poisson regression and linear regression in a two-stage analysis. For the Poisson regression, a separate effect is fit for each site and year. With 10 years of data, and 25 sites, that makes 216 parameter estimates (9x24=216). We have also considered separate covariate effects for time of day (6 levels) and plan to include site-specific effects (but not separately for each year), so that adds more parameters (=5+24=29). In addition, site-specific effects for time relative to low tide (8 levels) (7+24=31), date (1+24=25), and other parameters related to weather are used. If we average 6 replicate flights per year, we have 6x25x10=1500 observations. That makes approximately 300 estimated parameters, and the fraction of parameters estimated to number of data is 1/5. A problem with such an approach is that we are estimating hundreds of parameters, and we may be getting large variances and poor estimation properties under these conditions. For the second stage analysis, the mean effect for year and location are calculated from the Poisson regression parameter estimates for standardized states of the covariates, and then the sites are summed for each year. This sum is then used in linear regression to determine trend across years. This second stage does not formally include estimation variance from the Poisson regression, which is an additional concern.

We have considered variations to our model to get rid of the 2nd stage regression analysis, but they also cause difficulties. For example, we could put the overall trend parameter in Poisson regression. However, this would cause all sites to have a common yearly mean. Another approach would be to allow each site to have a separate intercept with a common trend in the Poisson regression. However, it is clear that not all sites have a common trend. A final approach is to allow each site to have a separate trend slope and intercept in the Poisson regression model, but then it is unclear how to combine all 25 slope estimates into a single estimate of overall trend. Ideally, we would like to weight each slope estimate by the abundance at each site, but computing the variance of such a method may not be possible.

The Poisson regression model has served its purpose as a simple model that, 1) incorporated covariates that allowed us to examine different effects on seal counts, 2) allowed us to adjust our counts to get better trend estimates, and 3) allowed us to do power analysis. However, as we acquire more data, we feel that it is important to model effects separately for each site, and this makes the model much more complicated. For example, how do we summarize an effect for time

of day, with 6 categories, for 25 sites? A natural approach is to combine parameters by giving them a distribution; this is called a hierarchical modeling approach.

Given the problems listed above, one solution is to put more structure on the model. This can be done using a hierarchical model, where all the "parameters" above can be considered "variables" in their own right, coming from one or a few "prior" distributions. For example, rather than having 25 separate trend slope parameters (one for each site), we might consider all 25 slopes as coming from a common prior distribution. These prior distributions have only a few parameters that control their behavior. Thus, we have reduced a large set of hundreds of parameters to a set that contains relatively few. Also, because the 25 slope parameters will have a "distribution," it is conceptually easy to take a weighted sum and obtain the proper variance for an overall trend.

With a hierarchical modeling approach, we will develop a hierarchical Bayes model that relates observed seal counts to a number of covariates. Covariates recorded at each observation include year, spatial coordinates, calendar day, time, height of low tide, time of low tide, and qualitative assessments of wind and sky conditions. Using modern Monte Carlo Markov Chain methods, we will assess the usefulness of any or all of these covariates in explaining and/or predicting the number of seals observed. An integral part of this modeling will be the inclusion of separate trend parameters for each site in the hierarchical Bayes model and then combining trend parameters in an overall approach to trend monitoring. Ultimately, a separate trend may be occurring at each of the 25 haul-out sites in the Prince William Sound. One can consider a trend parameter, such as the slope of a regression through time, for each site. Hierarchical Bayes methods are ideally suited for combining these 25 trend parameters to get an overall trend indicator for all sites.

Catching and Sampling Seals (will be completed in 1999)

Seals will be caught by entanglement in nets placed near the haulouts. Nets will be approximately 100 m long and either 3.7 or 7.4 m deep with standard floats or float line and light lead lines. Mesh openings will be about 30 cm stretched measure. Nets will be deployed from a 6 m boat assisted by one or two other small boats to assist in maneuvering the net and tending it to ensure that all captured seals are quickly detected and removed (see Frost and Lowry 1994b). Some seal pups may be caught using long-handled dipnets.

When seals become entangled, they will be brought into the boats or to shore, cut free from the tangle net, and placed into hoop nets (large stockings made of 1 cm mesh soft nylon webbing). As necessary, seals will be sedated with a mixture of ketamine and diazepam administered intramuscularly at standard doses (Geraci et al. 1981). Each seal will be weighed, measured, and tagged in both hindflippers with individually numbered plastic tags. Field personnel will collect approximately 50 cc of blood from the extradural intervertebral vein. Standard blood chemistry panels and virology screens (phocine distemper virus, herpes, and others as indicated) will be run on these samples. The following samples will also be taken: a 0.5 cm x 2.5 cm blubber biopsy for fatty acid analysis and analysis of energy content, whiskers for stable isotope analysis, and a small piece of skin for genetics studies. Virology screens will be coordinated and paid for by the ADF&G's NOAA-funded harbor seal study, as will all genetics analyses. Seal pups and small juveniles will be selected for instrumentation with satellite tags, as described below.

Total body composition (fat content, protein content, lean body mass) will be measured on a subset of the pups and juveniles that we sample using isotope dilution with deuterium oxide (D_20). D_20 is a stable isotope of water, which is widely used as a non-invasive method to measure body water pool size and the rate of water turnover in mammals and other vertebrates (Nagy & Costa 1980; Oftedal & Iverson 1987; Oftedal, Iverson & Boness 1987; Iverson et al. 1993). After administration of a known amount of D_2O, the isotope completely equilibrates with all body water of the animal. Measurement of the final dilution of D_2O in the body water (dilution space) can then be used to accurately measure total body water content (Oftedal, Bowen & Boness 1993). Body water content is then used to calculate total body fat, protein, and energy stores of the seal, based on the fact that the water and protein contents of lean body mass (fat-free mass) are approximately constant among mammals, particularly among individuals of a given species and age (Pace & Rathbun 1945; Reilly & Fedak 1990; Iverson et al. 1993).

Prior to the onset of the D_20 procedure, seals will be weighed to the nearest 0.5 kg, and a blood sample. Any stomach contents of the animal will be evacuated by gastric intubation using a 3/8 inch veterinary stomach tube. A pre-weighed amount (approximately 1g/kg body mass) of deuterium oxide (99.9% purity), contained in a syringe with a three-way stopcock, will be delivered by gastric intubation using a small 12 French stomach tube (to reduce total surface area during delivery). The syringe and stomach tube will then be rinsed with 2 x 5 ml quantities of water, and air blown through the tube as it is withdrawn to ensure complete delivery. The animal will then be held for approximately two hours to permit isotope equilibration. After that, two sequential blood samples, separated by about 20 minutes, will be taken to ensure that equilibration has occurred. Bloods will be centrifuged and sera collected and frozen in airtight cryovials until the time of analysis. Laboratory analyses will be done at Dalhousie University. Total free water will be collected from blood sera by heat distillation, and D_2O concentration will be determined by quantitative infrared spectrophotometry according to Oftedal & Iverson (1987) and Oftedal, Iverson & Boness (1987) on a Perkin Elmer Fourier Transfor Infrared Spectrophotometer with integrated data station (Paragon 1000).

Seals will be caught in two regions of PWS to coincide with sampling areas used is previous years. These will be: southern PWS near Montague, Green, and Little Green islands; and central PWS near Agnes, Smith, and Seal islands. We will try to catch and sample approximately 40-50 seals total per year in PWS.

Seals will be caught from other areas (Kodiak and SEAK) during similar time periods, to the extent possible, as part of the NOAA-funded harbor seal study. We hope to obtain about 20 blubber biopsy samples per year from each area. Additionally, wherever possible, blubber samples from harvested seals will be obtained from subsistence hunters in SEAK and Kodiak. Archived samples are available from both of these areas (10-20 per year since 1995).

Fatty Acids Analysis (analysis ongoing in 2000)

Recently, a method has been developed for understanding marine food webs through the use of fatty acid signatures (Iverson 1993). Fatty acids are essentially the building blocks of lipid. Organisms are able to biosynthesize and modify fatty acids, but there are biochemical limitations and differences in these processes depending on the organism. Specific fatty acids cannot be

synthesized by animals and therefore can only originate from diet. Because of this, some fatty acids in the food chain can be attributed to specific origins (Cook 1985). Lipids from marine organisms are characterized by a very complex array of fatty acids. There are substantial differences in fatty acid composition among species and prey types, as well as within species by geographic region (e.g., Ackman et al. 1975, Iverson 1993). In marine mammals, dietary fatty acids are often deposited in body tissue without modification (Iverson and Oftedal 1992, Iverson et al. submitted). Consequently, it is possible to trace fatty acids obtained from the diet and to compare arrays in the tissues of the predator to those in the prey consumed.

The use of specific lipids as biological markers has been demonstrated in a number of studies on fish and copepods (Lee, Nevenzel & Paffenhofer 1971; Sargent et al. 1988; Fraser et al. 1989; Klungsoyr et al. 1989; Graeve, Kattner & Hagen 1994; St. John & Lund 1996). Relative proportions of dietary fatty acids have also been shown to be reflected in the fatty acid composition of storage lipids in both captive and free-ranging carnivores (e.g., Reidinger et al. 1985; Rouvinen & Kiiskinen 1989; Colby, Mattacks & Pond 1993; Pond et al. 1995). In seals, ingested fatty acids can be deposited directly into adipose tissue, such that blubber may be a mirror of current diet when a seal is rapidly fattening on a high fat diet (Iverson et al. 1995), or may reflect a longer-term integration of dietary fatty acids and possibly biosynthesized fatty acids at times of reduced intake (Kirsch, Iverson & Bowen 1995).

This concept of fatty acids as trophodynamic indicators can be applied to harbor seals. In general, lipid transfer from prey to deposition in tissue is extremely efficient (Iverson 1988, Iverson et al. 1995). Because certain fatty acids cannot be biosynthesized by seals, these can be identified as being of dietary origin. Since most seals undergo seasonal periods of fasting and depletion of fat stores (e.g., during the breeding season or the molt) followed by intensive blubber deposition (prior to the subsequent breeding season), blubber fatty acids usually reflect the integration of diet over a period of several months. Thus, fatty acids in blubber provide information on dietary history of the animal. Since many seals tend to feed on only a single or few selected prey species at a given time or season (e.g., Bowen 1990), this facilitates the use of fatty acid signatures.

In the initial study funded by the EVOS Trustee Council, we used fatty acid signatures to investigate the diet and spatial scales of foraging in harbor seals and selected prey in PWS and the Gulf of Alaska (Iverson, Frost and Lowry, in press). We found large differences in the fatty acid composition of blubber from seals sampled in geographic regions several hundred kilometers apart. Within PWS, fatty acid signatures distinguished seals from haulouts only a few kilometers apart, suggesting that seals forage very site-specifically. Prey fatty acid patterns also differed on similarly small spatial scales within PWS.

The next step is to advance fatty acid signature analysis so that we can use it to quantitatively estimate the composition of the diet. This means not only determining the species composition, but also the size classes of species eaten and possible area from which the prey were fed upon. Then, it will be critical to apply this technique to evaluating possible problems in recruitment of the population by better understanding the foraging ecology of juvenile harbor seals and perhaps pregnant females. It will be important to document diet differences among age-groups in the declining PWS harbor seal population, as well as differences which occur in the same age-groups but in areas where the population is stable. It will also be important to compare this information

with data available from time periods of lesser declines (1970's and 1980's). Juveniles in particular are thought to be significantly affected by reduced prey availability at scales relevant to the nutrition of individuals (NRC 1996). Thus, there could be several indications about stresses on juveniles through understanding diets. Small forage fish species such as capelin and sandlance have long been an important part of pinniped diets and a decline in these prey species may have affected the seal populations which depend upon them. If reductions in these prey are apparent in the diets of adult seals in areas of decline, this would suggest a lower abundance of these prey in general. If indeed juveniles are found to be dependent on and limited to smaller size prey, this would coincide with the above finding. If juveniles are feeding on smaller but different prey than the small prey in adult diets, this might indicate competition with large animals for available food and further indication of low abundance of important forage fish species.

Blubber samples will be taken from seals of the various demographic groups using routine biopsies (sterile 6 mm biopsy punches). Samples will initially be collected in late June-early July to coincide with initial summer foraging period. Samples will be placed in chloroform and methanol with BHT as an antioxidant, and kept frozen until analyzed. Samples will be collected from all seals that are caught during tagging operations. Blood will be collected from the same animals and centrifuged in the field. In addition, some samples may be available through the biosampling program being conducted by the Alaska Native Harbor Seal Commission.

Blubber samples archived by ADF&G from harbor seals collected in the 1970s will be subsampled, placed in BHT and sent to Dalhousie University for analysis. Several of these archived samples were analyzed on a test basis during 1997 to determine whether the blubber was still in suitable condition. The analyses were successful, indicating that some or all of the remaining archived specimens will be useful for this study. There are 365 total archived specimens from 1976-1978, of which approximately 200 are from areas where recent samples have also been collected (southeast Alaska, n = 16; Kodiak, n = 193; Middleton Island, n = 5; and miscellaneous others from the northern GOA). Samples will be prioritized based on age and specific location, to facilitate comparisons with samples from the 1990s. Some of these same samples have been analyzed for lipid and water content, as well as total caloric density, by Castellini et al. (EVOS project 001). This will enable a comparison of the energy content of the blubber and diet in recent and 20-yr-old samples from areas that have and have not declined.

By 2000, few additional prey items will be collected. We will focus on several key prey species which are readily available from several locations without large-scale fish sampling programs. We plan to continue to assess annual variation in the fat content and fatty acid composition of prey species. Particular emphasis will be on characterizing size-class and regional differences in the four prey species that are likely of most importance to harbor seals and especially juveniles: herring, pollock, capelin, and sandlance. Prey species from the other areas of harbor seal sampling (Kodiak and SEAK) will be obtained as possible through other studies and sources of funding, including in cooperation with the National Marine Mammal Laboratory as part of sea lion studies.

Laboratory analysis and evaluation of data will be conducted by Dr. Sara Iverson at Dalhousie University, Nova Scotia. Fatty acids will be extracted from seal blubber and prey according to methods described in Iverson (1988). Fatty acid methyl esters will be prepared directly from

aliquots of the chloroform extract, then extracted and purified in hexane. Analysis of fatty acid methyl esters will be performed according to Iverson et al. (1992) using temperature programmed capillary gas liquid chromatography and linked to a computerized integration system (Turbochrom, PE Nelson). Identifications of rare isomers will be performed using techniques described in Iverson, Frost and Lowry (in press). Approximately 70 fatty acids and isomers can be separated and quantified in most marine lipids. The proper isolation of all components in any sample is critical in assessing diets and prey items; these methods are currently set up and routinely used in the Dalhousie University laboratory of Dr. Iverson.

Data will initially be analyzed using a multivariate model called classification and regression tree (CART) analysis (Clark and Pregibon 1992). This model has recently been applied and modified for fatty acid signature analysis (Iverson et al. 1997; Smith et al. 1997). CART is a non-parametric technique which considers all 70 component fatty acids in each sample and uses the fatty acid arrays of species to determine classification rules for types of signatures. CART proceeds by recursively partitioning data into two or more groups based upon a series of dichotomous splits, hence building complex trees through which observations (predators or prey) may subsequently be sent for classification. This method will allow us to differentiate individual seals and groups of seals by such factors as age-group, pregnancy status, or haulout location. These differences in turn are a function of differing fatty acid signatures resulting from differences in diets. We will also use CART to determine characteristics and differences among prey by species and within species by size class, time period, and geographical location. We will also account for differences in fatty acid classes in the use of CART. In other words, in the analysis and interpretation of data, fatty acids will be grouped as: 1) components which could readily be biosynthesized by the seal; 2) components that could be biosynthesized but at the measured levels are likely mostly of dietary origin; and 3) components that could only come from the diet. Categories 2 and 3 represent the important "indicator" fatty acids (Iverson 1993). The latter two categories will be most heavily relied upon in interpreting CART results.

Modeling of Seal Diet Composition using Fatty acid Signatures (ongoing in 2000)

The use of fatty acids to elucidate diet and trophic relationships has proceeded considerably in its developmental stages and now requires a mathematical modeling component in order to use it quantitatively. Using fatty acids to determine the diet of seals is facilitated by the fact that seals go through biannual periods of extensive blubber fat depletion followed by intensive fattening and that 2-4 prey species often account for most of the diet. Nevertheless, in free-ranging seals, fatty acid composition of lipid stores will rarely, if ever, match that of their prey because dietary fatty acids will be integrated into the seal's fatty acid signature. The time course of these changes will depend on the rate of food intake and the extent to which lipids are stored seasonally. Finally, biosynthesis of some fatty acids will take place, thus altering their representation in the signature. Thus, the next stage in using fatty acids to estimate diet composition, must be the development of a statistical model which takes possible prey species signatures and computes the most-likely mixture of signatures (species and levels) to create the closest signature (a maximum-likelihood estimate) to that of the predator. Such a statistical program must incorporate information on a wide range of potential prey signatures, and the variability in these signatures with size-class and geographical location, as well as season if applicable. The mathematical model must also incorporate a relative weighting of prey signatures that reflects the proximate fat content of each

prey and size class, and finally, weighting on individual fatty acids as a function of their ability to be biosynthesized by the predator. We expect to start out from a basis of an optimization problem with a simple least square error assumption (R. Myers, pers. comm.). Given the constraints listed above, standard optimization methods cannot be used. The inequality (of fatty acids) is more difficult to deal with analytically and hence also the estimation of standard errors. However, software can be written and developed to handle these. This work will be done in the laboratory of Dr. S. Iverson as a cooperative effort between Alaska and Scotian Shelf research and with partial support from NSERC.

Fatty acid signature analysis has not to date been a stand-alone method, but neither has any other currently available method for examining marine mammal diets. Stomach contents analysis is limited by our ability to obtain large enough samples, the digestive state of contents, and by the fact that food in a stomach represents a single meal. In PWS, large tidal fluctuations every 6 hours make it virtually impossible to collect scats from areas where seals haul out. Stable isotopes indicate the trophic level at which seals feed and temporal variations in prey type, but provide little information on specific prey. Studies of prey availability (e.g. from trawl surveys) are necessary to establish the "menu" from which seals may choose, but they do not reflect the availability of prey to seals on relevant scales or the energetic costs of capturing different prey. Progress towards answering the question of "Is food limiting harbor seals?" will most likely come through the combination and integration of a variety of approaches, but it is clear from our previous work that fatty acids may be a particularly valuable tool in achieving a better understanding of trophic dynamics, dietary differences and demography of harbor seal populations in PWS and the Gulf of Alaska.

Satellite-tagging (tagging will be completed in 1999; analysis ongoing in 2000)

Satellite-linked telemetry can be used to gather information about habitat use, including site fidelity, movements between haulouts and in and out of PWS, seasonal changes in hauling out patterns, feeding habitats, and feeding and diving behavior. Satellite-linked time-depth recorders (SDRs) have provided researchers with the ability to monitor location and diving behavior of marine mammals (Mate 1986, 1989, Hill et al. 1987, Stewart et al. 1989, Lowry et al. 1994, Frost and Lowry 1994b). The SDRs transmit to a satellite-based Doppler positioning system that calculates locations and tracks movements of animals with considerable accuracy. When combined with appropriate environmental sensors and microprocessor hardware and software, other information about an animal's environment and behavior can be transmitted to the satellite.

This study has demonstrated that SDRs are an effective means of monitoring the movements and haulout locations of harbor seals in PWS. During 1992-1998, significant data were received from SDRs attached to 71 harbor seals in PWS, including 30 males and 41 females (Table 1). Twenty-six were adults, 23 were subadults, and 22 were pups. SDRs were attached to 28 seals from areas in central PWS that were oiled by the EVOS (Seal Island, Herring Bay, Bay of Isles, Applegate Rocks); four from eastern PWS (Olsen Bay, Gravina Island); one from northwestern PWS (the Dutch Group); and 38 from unoiled sites in southcentral PWS (Port Chalmers, Stockdale Harbor, Little Green Island, and Channel Island). SDRs were operational for up to 10 months, and provided locations for about 80% of those days.

During 1999, SDRs will be attached to 7 harbor seal pups at locations chosen to complement data from 20 pups tagged in 1997-1998 and from adults and subadults tagged during 1992-1996. These will include southern PWS near Montague, Green, and Little Green islands (herring and fish data from here, and a large number of seals); and central PWS near Applegate Rocks and Seal Island (APEX fish data available, and significant seal haulouts with pups). Actual tagging locations will depend on where seals are present and can be caught.

One-quarter-watt transmitters (10 cm x 5 cm x 3 cm and weighing 170 g) will be attached to the mid-dorsal surface of seal pups by gluing with epoxy resin (Fedak et al. 1984; Stewart et al. 1989). SDRs attached after weaning should remain attached until the next molt, but will not operate that long. A prototype 0.25-watt SDR attached to a harbor seal pup in September 1996 operated until the end of December and sent approximately 12,000 transmissions. Through duty cycling and by limiting the number of daily transmissions, four of twelve SDRs deployed on pups in PWS and seven of the ten deployed at Tugidak during 1997 were still transmitting in March. It is likely that new, more powerful batteries will be available by 1999, and perhaps as early as the 1998 field season.

Data will be acquired from the ARGOS satellite receiving system and formatted using software provided by the manufacturer of the transmitters. Each SDR will transmit signals to polar-orbiting satellites whenever the seal is hauled out or when it surfaces sufficiently long for a transmission to occur. An uplink occurs when a satellite is positioned to receive the signal. Information transmitted by the SDR is used by Service ARGOS to calculate the geographic location of the seal. Units will be equipped with built-in programmable microprocessors to collect and summarize data for periods when animals are diving and store it for later transmission, as has been done for crabeater seals, Steller sea lions, and spotted seals (Hill et al. 1987; R. Merrick, personal communication; Lowry et al. 1994a). These data will be stored in six hour blocks and transmitted to the satellite once the six hour data collection period is complete. Sensor information from a pressure transducer and a conductivity switch will be used to indicate when the animal is hauled out. Data from four periods will be stored in memory, providing at least a 24 hour window for transmission before the data are lost. Dive data will be summarized as histograms in depth bins of 4-20 m, 21-50 m, 51-100 m, 101-150 m, 151-200 m, 201-250 m, 251-300 m, 301-350 m, and over 350 m, and duration bins of 0-120 seconds, 121-240 seconds, 241-360 seconds, 361-480 seconds, 481-600 seconds, 601-720 seconds, 721-840 seconds, 841-960 seconds, 961-1080 seconds, and over 1080 seconds. In addition, SDRs will store and transmit the amount of time spent in each depth bin and the total time spent at the surface.

Each SDR broadcasts a unique identification code so that data can be assigned to a particular seal. Position accuracy for all geographical location information is rated by Service ARGOS to reflect the predicted accuracy of the calculated locations (Fancy et al. 1988, Stewart et al. 1989). Locations calculated by ARGOS will be screened for accuracy and plotted on charts of PWS.

Data on the haulout patterns of tagged seal pups will be examined for indications of daily or seasonal variations, for example to determine whether there is a change in the frequency of haulout by season, or whether the amount of time spent hauled out changes. Plots of locations where continuous signals are received will be used to determine the degree and regularity of use of particular haulout sites. We expect to receive fewer locations of seals while at sea, because the

transmitter antenna will frequently be submerged. At-sea locations will be plotted as an indication of areas used for feeding. Information on depth and pattern of diving will be compiled, and will provide additional information on the general areas used for feeding.

Dive data will be presented as graphs and histograms which indicate the range in individual behavior as well as summary data for all seals combined. Dive data histograms will present the number of dives at different depth increments and by duration of dive. Means and standard deviations for dive depth and duration will be calculated and compared for seals in different locations or habitats and at different times of day and year. Compilation of data on time and location of feeding dives will be used to identify feeding areas near different haulouts, if possible. If sensors indicating whether the seal is on land or at sea become more reliable and the necessary SDR software is developed to provide a continuous record of this information, then diving and hauling out cycles will be examined relative to time of day, tide, and season. These data will be compared for different age groups. Summaries of the number and quality of uplink data and at-sea position data will be presented in tabular form.

Tabular summaries will also be prepared for use of different haulouts by individual seal pups, and frequency of haulout and amount of time spent feeding by season. These data will be used to evaluate site fidelity of seal pups, to quantify the amount of interchange among haulouts within and outside of the area impacted by the EVOS and within and outside of PWS, to determine seasonal importance of particular haulouts, to identify areas used for feeding, and to examine differences in movements and feeding behavior of pups, subadult and adult seals.

C. Contracts and Other Agency Assistance

Survey aircraft will be chartered from the private sector. Charter aircraft for surveys will not require contracts. ADF&G maintains a list of qualified air charter operators. Aircraft for surveys will be chosen from this list according to state procedures. Vessels will also be chartered from the private sector. Vessel support for tagging work will use small vessels contracts that will be completed by the Principal Investigator according the state SOP manual.

Costs of acquiring SDR data from Service ARGOS are paid for through a contract with NOAA. This contract covers all ADF&G Division of Wildlife Conservation satellite tagging projects, not just this harbor seal restoration project, and is processed by the Division of Wildlife Conservation. Funds for data acquisition must be encumbered and guaranteed to NOAA in early February. Actual contract processing occurs later in the spring.

Satellite SDRs will be purchased under contract award from Wildlife Computers, a private company in Seattle, Washington. The contract award is valid through the proposal period. Wildlife Computers is the only company in the United States which manufacturers SDRs with the capabilities necessary to acquire the data we require about diving behavior of seals.

Fatty acid analyses and interpretation will be done by Dr. Sara Iverson at Dalhousie University through a Cooperative Agreement between ADF&G and Dalhousie. Dr. Iverson is the only person in North America with specific experience in analysis of fatty acids in seal blubber, and

particularly with the sophisticated statistical analyses necessary to infer diet from the relative abundance of these fatty acids.

Hierarchical Bayes analysis will be conducted as a cooperative effort between Jay Ver Hoef, ADF&G, and Dr. Ron Barry, Professor of Statistics at University of Alaska Fairbanks. This work will be undertaken through a Reimbursable Services Agreement between ADF&G and UAF. Drs. Ver Hoef and Barry have co-taught Bayesian statistics at UAF, and their experience with hierarchical Bayes model will speed the process of obtaining results.

SCHEDULE

A. Measurable Project Tasks for FY 00 (October 1, 1990 - September 30, 2000)

Aerial surveys, data analysis and final report writing will take place during 2000. A schedule of field activities, data analysis, and report preparation is shown in Table 3 and below.

FY 00: October 1, 1999- September 30, 2000 (00064)

October:	Analyze 99 aerial survey data (preliminary)
October-March:	Retrieve 1999 Argos SDR data
October-September:	Analyze SDR tag data
October-March:	Analyze 1999 seal/prey fatty acids samples
October-March:	Fatty acids model development continued
January (3-4 days)	Attend Annual Restoration Workshop
February (2-3 days)	Coordination meeting for ADF&G and NOAA harbor seal studies
January-June:	Final SDR tag data analysis
January-June:	Final trend analysis 1989-1999
January-June:	Final fatty acid analysis and interpretation
April-September	Final report and manuscript preparation
31 December:	Submit final report

B. Project Milestones and Endpoints

Objective 1

June 2000:	Submit manuscript describing 1989-99 PWS harbor seal trend analysis using hierarchical Bayes methods
August 15-30, 2000:	Conduct aerial surveys at 25 sites in PWS

Objective 2

June 2000:	Submit ms describing 1989-99 PWS harbor seal trend analysis using hierarchical Bayes methods
December 30, 2000:	Submit final report with recommended monitoring scheme

Objectives 3 -7

June-August, 1999:	Sample 30-50 harbor seals for blubber fatty acids
June-August, 1999:	Sample 30 seal pups and juveniles using D_20 for body composition
October-March,1999-00:	Analyze 50-80 harbor seal samples for fatty acids
October-December, 1999:	Analyze D_20 samples
November 1999:	Paper on fatty acids work at 13th Biennial Marine Mammal Conf.
September 2000:	Submit manuscript describing fatty acids work

Objective 8

June-July 1999:	Attach SDRs to 6-8 seal pups in PWS
November 1999:	Paper at 13th Biennial Marine Mammal Conf. on PWS seal diving
February 2000:	Submit manuscript on PWS seal movements
August 2000:	Submit manuscript on diving and movements of seal pups in PWS

Objective 9

November? 1999-2000:	Attend ANHSC meetings to discuss status and studies with hunters, or provide input to staff as requested

C. Completion Date

This project will continue for one more fiscal year, FY 00. Field work and laboratory analyses will be conducted during FY 99. Final data analyses will be conducted and a final report prepared in FY 00.

PUBLICATIONS AND REPORTS IN FY

1. Oral/poster presentations at 13th Biennial Conference on the Biology of Marine Mammals; papers to include harbor seal diving behavior, fatty acids analysis, and Bayesian trend count analysis (November 1999)
2. Oral/poster presentations at EVOS Restoration Annual Workshop (January 2000)
3. Submit manuscript on PWS seal movements and diving (February-August 2000)
4. Annual report for FY 1999 studies; will include results and/or draft manuscripts of molting surveys including progress of hierarchical Bayes covariate and trend analyses; analysis of data for SDRs deployed on pups in June-July 1998; status report on 1999 fatty acid analyses (April 2000)
5. Manuscript describing hierarchical Bayes approach to trend analysis (June 2000)
6. Manuscript describing fatty acids work (September 2000)
7. Report of field activities for August surveys (September 2000)
8. Final report for project 064 (September 2000)

Manuscript titles and journals to which they will be submitted have not been determined. Topics include: 1) results of hierarchical Bayes modeling of the harbor seal trend count data (Ver Hoef and Barry); 2) age, sex, and location related differences in harbor seal diets in Prince William Sound and the Gulf of Alaska using fatty acid signature analysis (Iverson, Frost, et al); and 3) seasonal movements and distribution of satellite-tagged seals in PWS (Lowry and Frost). It is

possible that a fourth manuscript will be prepared describing the use of population modeling to evaluate the role of carrying capacity in the ongoing harbor seal decline (Small, Frost, et al.).

PROFESSIONAL CONFERENCES

Project investigators plan to attend the 13th Biennial Conference on the Biology of Marine Mammals in Hawaii in November 1999. This conference is sponsored by the Society for Marine Mammalogy and is the largest marine mammals conference in the world. Abstracts will be submitted and it is anticipated that oral or poster presentations will describe the results of fatty acids (Iverson), genetics (O'Corry-Crowe), satellite-tagging studies (Frost or Lowry), and Bayesian statistical analysis (Ver Hoef). Results of other studies using samples from PWS provided by this restoration study are also likely to be reported but travel will not be funded by this grant.

NORMAL AGENCY MANAGEMENT

This project is funded entirely by the Trustee Council as a restoration project. ADF&G conducts no other studies of harbor seals in PWS that are not a part of the restoration program. ADF&G has no management responsibility for harbor seals. ADF&G biologists are conducting this research as principal investigators because of their many years of experience investigating the biology of seals and other marine mammals in Alaska. The Subsistence Division of ADF&G has been funded by the Trustee Council to monitor the harvest of harbor seals in PWS (Project 244) and to conduct food safety testing (Project 279). Subsistence Division also collects and reports harbor seal harvest data for other parts of the State with funding from NOAA.

ADF&G is conducting studies of harbor seals in SEAK and near Kodiak with funding from NOAA/NMFS. Those studies contain similar components to the PWS study and are closely coordinated to ensure that data are collected and analyzed in a similar manner. This will facilitate comparisons of data from declining populations (PWS and Kodiak) and a stable population (SEA) of harbor seals. Equipment is shared by the two projects. Consequently, it has not been necessary for the PWS project to purchase many equipment items and supplies solely for the use of this study. Because of these other ongoing projects, the PWS harbor seal project has had access to a GIS system with which to analyze tagging data.

Without this project, information on the status and trend of harbor seals in PWS will not be regularly available. There will be no systematic documentation of trend, and whether or not the decline continues will be unknown for a much longer time than if regular monitoring continues. Power analysis of data collected through this study has indicated that a minimum of five consecutive surveys is required to reliably detect a trend. If surveys do not occur on a regular basis, it will be a very long time before a trend can be correctly identified.

Because of Trustee Council-funded projects, progress is being made on communicating information about the decline to the public, in particular to fishermen who may incidentally take harbor seals while fishing and to subsistence hunters from PWS villages. This transfer of

information is making local residents more aware of the factors that may affect the decline, and has resulted in the initiation of a village-based biosampling program that may provide important samples to researchers. One of the significant long-term benefits of this and other harbor seal studies will be the involvement of local hunters in the research and management of harbor seals and the formation of the Alaska Native Harbor Seal Commission.

The statistical methods developed to analyze survey data from PWS will be applicable to harbor seal surveys in other regions of Alaska and elsewhere. Other investigators should be able to design more reliable and cost-effective surveys using methodology developed through this Trustee Council-funded project. Similarly, the application of fatty acids analysis to investigations of diet and changes in diet is likely to have significant and far-reaching effects on our ability to investigate the trophic dependencies and interactions of many other species, not only marine mammals. Already, techniques developed as part of this project appear to have application for studies of fish movements and stock identity.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

Other EVOS-funded marine mammal studies have included: Recovery of Harbor Seals from EVOS: Condition and Health Status (Project 001); Harbor Seals and EVOS: Blubber and Lipids as Indices of Food Limitation (Project 117-BAA, UAF); and Isotope Tracers - Food Web Dependencies in PWS (Project 170, UAF). Investigators from the three projects regularly communicate and discuss these projects, and will continue to do so in the future.

Project 064 is a multidisciplinary, inter-agency undertaking. Surveys and satellite tagging will be conducted by ADF&G; lipid analyses and interpretation by Dalhousie University; blood chemistry analyses at UAF; and hierarchical Bayes modeling by ADF&G and UAF. Inclusion of interdisciplinary components within the same project will ensure that data are shared and interpreted in an interdisciplinary manner.

Project 064 (this project) will provide logistics, the MMPA permit to conduct sampling, and access to seals and samples for this study and for a study proposed by Dr. Jennifer Burns (Moss Landing Marine Laboratory, California) regarding pup physiology. Archived harbor seal data and blubber samples have been provided to Castellini/UAF for use in analyses of body condition and blubber. Subsamples of these same archived ADF&G harbor seal blubber samples have been sent to Dalhousie University for fatty acids analysis. It will be very useful to have historical fatty acids and blubber quality results from the same individuals. Harbor seal investigators at ADF&G and UAF have been working successfully together for the last five years on harbor seals in PWS and elsewhere, and future collaborations should be equally productive. Regular meetings and seminars are held by marine mammal investigators at UAF and ADF&G Fairbanks to exchange information and ideas.

This study will continue to directly interface with the study entitled "Isotope Ratio Studies of Marine Mammals" (Project 170, UAF) as long as it continues to be funded. Samples of seal whiskers and seal prey have been and will continue to be provided to that study. Investigators of the two projects (Frost and Schell/Hirons) discuss stable isotope results at regular intervals and

are pursuing preparation and publication of a joint manuscript describing preliminary findings of this study.

Prey samples for fatty acid analysis have been obtained through PWS System Investigation studies, the APEX study, and from ongoing ADF&G work. In the future, as large scale fisheries surveys receive less funding, we expect most of our samples to come from routine ADF&G operations. Information on distribution and movements of harbor seals, and diving behavior, will be shared with PWS Sound Investigation modeling studies to look at energy flow within PWS, and with forage fish investigators who may examine the effects of predation on fish population dynamics.

Statistical modeling to assign quantitative values to seal diets based on fatty acids signatures will be done as a cooperative effort between this restoration study and Scotian Shelf research project, with partial support from NSERC.

This harbor seal study has obtained samples of prey and incorporated results from Herring (ADF&G) and SEA studies being submitted under the PWS System Investigation, and from the study Apex Predator Ecosystem Experiment. In the next year, prey samples from the GOA and SEAK will be obtained on an opportunistic basis, in cooperation with other ADF&G harbor seal studies and with National Marine Mammal Laboratory (NMML) sea lion projects. These samples will be analyzed with non-EVOS funding, but analyses will be included in the results of the project. Fatty acids analysis in the future will emphasize pollock, herring, capelin, and sand lance. These species are important to seabirds and to harbor seals. The NMFS Auke Bay laboratory has been funded to investigate fatty acid profiles and lipid class analysis of herring and other forage fishes. That study plans to conduct detailed sampling and fatty acids analysis of herring (and perhaps others) in northeastern (Port Fidalgo) and southwestern PWS. Investigators of that project and this harbor seal study will coordinate to eliminate overlap in sample analysis. Project 064 will also share some harbor samples with Auke Bay personnel for duplicate analysis. This will provide a basis through which to ensure that results of analyses conducted by different laboratories are the same and can therefore be compared and combined. This is especially important as fatty acids studies become more prevalent and are conducted by a variety of laboratories.

ADF&G harbor seal investigators are currently and will continue to participate in interactive discussions with subsistence hunters in PWS and the GOA the Alaska Native Harbor Seal Commission. These discussions include the ongoing harbor seal decline, communication of results of Restoration-funded studies, and suggestions for future research.

ADF&G receives funding from NOAA to conduct complementary studies of harbor seals in the northern GOA and SEAK. This funding provides an "economy of scale" for many aspects of both studies. For example, disease and genetics analyses of PWS seals have been done at minimal or no cost to this study, but are instead provided through the NOAA-funded harbor seal study. Equipment is shared and analytical techniques and software developed by one project can be used by the other.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

There are no major changes between what we proposed in the 3-year proposal submitted in April 1997 and this renewal proposal. The major focus in FY 00 will be on addressing hypotheses related to food limitation and population trend. This focus will continue in the form of fatty acid analysis, analysis of historical fatty acid samples from Kodiak and SEAK, and analysis of satellite tagging data from pups. Annual molt-period surveys will continue. Survey analysis will include a hierarchical Bayes approach that should eliminate some problems with variance associated with so many count locations and the variety of covariates.

PROPOSED PRINCIPAL INVESTIGATOR

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Table 1. Harbor seals instrumented with SDRs and sampled during 1992-1998.

Location	Date	SDRs						DNA	Blood	Fat	Whiskers	D_2O
		AdM	SubM	AdF	SubF	PupM	PupF					
Northern PWS												
Dutch Group/Lone I	May 95		1					5	5	5	5	
Northeastern PWS												
Gravina Island	Sep 94		1					3	3	3	3	
	Sep 95				1		1	2	2	2	2	
Olsen Bay	May 95				1			2	2	2	2	
	May 96							4	4	4	4	
	Jun 97							7	7	6	7	3
Central PWS												
Applegate Rocks	May 92		3	1					5			
	May 93	2						5	5			
	Sep 93							1	1		1	
	Sep 95							2	2	2	2	
	May 96				1			2	2	2	2	
	Sep 96				1			3	3	3	3	
	Jun/Jul 97					1	3	21	21	21	21	12
	Jun 98					2		18	19	22	18	12
Bay of Isles	Sep 93	1						1	1		1	
Seal Island	May 92							1	3			
	May 93	3		1				7	7			
	Sep 93	2	1	1				10	10		10	
	May 96		1					3	3	3	3	
	Sep 96							4	4	4	4	
	Jun 97					2		2	2	2	2	2
	Jun 98					1	1	11	11	11	11	7

Revisio 1-8-99
Approved TC 8-9-99

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000
Personnel		$66.6
Travel		$5.1
Contractual		$43.4
Commodities		$1.3
Equipment		$0.0
Subtotal	$0.0	$116.4
General Administration		$13.0
Project Total	$0.0	$129.4
Full-time Equivalents (FTE)		0.9
Other Resources		

LONG RANGE FUNDING REQUIREMENTS

Estimated FY 2001	Estimated FY 2002
$0.0	$0.0

Dollar amounts are shown in thousands of dollars.

Comments:
This proposal is for the last year of an ongoing harbor seal study. It provides information on population trends, movements, and ecology of harbor seals, including changes in diet, in order to identify causes of the apparently ongoing decline among harbor seals in central PWS. Emphasis in FY 00 will be on analysis of previously gathered telemetry data on adults and preparation of manuscripts dealing with fatty acids analyses, modeling population dynamics relative to carrying capacity, Bayesian survey analysis, and diving behavior of seals.

None of the costs identified in this budget are for NEPA compliance. Marine mammals projects obtain permits required under the Marine Mammal Protection Act from NOAA as part of routine operations. Costs for meeting attendance are identified under travel and total $3.7 K. This includes attendance at the annual EVOS workshop, and two persons to present papers at the 13th Biennial Marine Mammal Conference.

The proposed FY 00 budget is within the guideline presented in the FY00 Invitation to Submit Restoration Proposals. This project achieves major cost savings by collaborating with other studies and agencies to conduct this work. For example,ADF&G receives funds to conduct harbor seal studies in other parts of Alaska. This enables investigators to share costs for equipment, computers and software, as well as new methodologies and approaches to data analysis. Costs for fatty acid model development will be shared with Scotian Shelf research projects. Fatty acid samples to be use din comparisons of PWS and other geographic areas will be provided by other ADF&G harbor seal studies.

FY00

Prepared: 7/8/99

Project Number: 00064
Project Title: Monitoring. Habitat Use and Trophic Interactions of Harbor Seals in Prince William Sound
Agency: ADF&G

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 2000
K. Frost	WBIII - Program Coordinator and Mngt	18K	5.0	6.5		32.5
L. Lowry	WBIV- Sat Tag Analysis & Interpretation	20J	2.0	7.0		14.0
R. DeLong	Analyst Programmer III-GIS Programmin	17F	0.5	6.0		3.0
J. Ver Hoef	Biometrician II - survey statistical analysis	19F	1.0	6.4		6.4
G. Sheffield	WBI - data anlysis and graphics	14A	2.0	4.0		8.0
G. Pendleton	Biometrician II - sat tag analysis	19B	0.5	5.3		2.7
	Subtotal		11.0	35.2	0.0	
					Personnel Total	$66.6

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 2000
Fbks-Cordova for Aug surveys, 1 person	0.5	1	12	0.1	1.7
Fbks-Anchorage, annual workshop, 1 person	0.2	1	5	0.1	0.7
Rental car, Cordova for surveys			12	0.1	1.2
Fbks - Hawaii for 13th Biennial Marine Mammal Conference	0.8	1	7	0.1	1.5
				Travel Total	$5.1

FY00

Prepared: 7/8/99

Project Number: 00064
Project Title: Monitoring. Habitat Use and Trophic Interactions of Harbor Seals in Prince William Sound
Agency: ADF&G

FORM 3B
Personnel
& Travel
DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FY 2000
NOAA contract and ARGOS expenses for ARGOS satellite data, June 99 tags	4.0
Print/graphics (slides for workshops, report production)	0.3
Postage (DHL, courier, etc.)	0.2
Aircraft charter 35 hrs @ $.24/hr	8.4
Lipid analysis contract with Dalhousie University	20.0
Freight and shipping of samples	0.5
RSA with UAF for Bayesian survey analysis	10.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$43.4

Commodities Costs:	Proposed
Description	FY 2000
Misc. field and meeting supplies (notebooks, marine charts, film, etc.)	0.3
Computer supplies and software for graphics, GIS, and other analyses	1.0
Commodities Total	$1.3

FY00

Prepared: 7/8/99

Project Number: 00064
Project Title: Monitoring. Habitat Use and Trophic Interactions of Harbor Seals in Prince William Sound
Agency: ADF&G

FORM 3B
Contractual & Commodities DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases:	Number of Units	Unit Price	Proposed FY 2000
Description			
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
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		
Equipment used by project, purchased with oil spill funds		
Leitz binoculars	1	ADF&G
HP LIID Printer	1	ADF&G
Compaq 286 Computer	1	ADF&G
Zodiac Raft	1	ADF&G
Equipment used by project, but purchased with non-oil spill funds		
20 ft Boston whaler	1	ADF&G
17 ft Boston whaler	1	ADF&G
Seal nets	1	ADF&G
2 486 computers + Plotter	1	ADF&G
Printer	2	ADF&G
Color printer	1	ADF&G

FY00

Prepared: 7/8/99

Project Number: 00064
Project Title: Monitoring. Habitat Use and Trophic Interactions of Harbor Seals in Prince William Sound
Agency: ADF&G

FORM 3B
Equipment
DETAIL

Approved TC 8-9-99

Monitoring of Oiled Mussel Beds in Prince William Sound

Project Number:	00090
Restoration Category:	Monitoring
Proposer:	Patricia M. Harris and Christine C. Brodersen NMFS, Auke Bay Laboratory ABL Program Manager: Dr. Stan Rice NOAA Program Manager: Bruce Wright
Lead Trustee Agency:	NOAA
Cooperating Agency:	ADF&G
Alaska Sea Life Center:	No
Duration:	closeout
Cost FY 00:	$ 64,000
Geographic Area:	Prince William Sound
Injured Resource/Service:	Mussels, Intertidal Communities, Vertebrate predators ,Subsistence

ABSTRACT

This project assesses the recovery of 28 mussel beds in Prince William Sound that still had significant concentrations of *Exxon Valdez* oil when last sampled in 1995 or 1996. Continued sampling is warranted until impacted mussel predators are fully recovered or hydrocarbon concentrations in the sediments and mussels in the beds return to pre-spill levels. In 1999 we will measure hydrocarbon concentrations in mussels, other invertebrates, and sediments and monitor densities of mussels and other selected invertebrates in these beds. We replaced oiled with clean sediments in 12 of the beds in 1994. Replaced sediments remained clean though 1995 and mussel hydrocarbon concentrations decreased significantly. However, 1996 samples indicated recontamination of the replaced sediments and the potential for recontamination of mussels. Sampling in 16 beds that were not restored will document rates of natural recovery. To complete the design, we will sample mussels, sediments and other invertebrates in two unoiled reference beds. In 2000 we propose to complete the chemical analysis of samples collected in 1999, complete data analysis, and prepare final reports.

INTRODUCTION

Many blue mussel (*Mytilus trossulus*) beds impacted by the *Exxon Valdez* oil spill (EVOS) were not cleaned by the EVOS Interagency Shoreline Cleanup Committee to minimize damage to the beds. Natural processes did not quickly reduce the substantial amounts of *Exxon Valdez* oil (EVO) remaining in mussels and sediments underlying mussel beds. In 1992, the Auke Bay Laboratory and National Park Service (Restoration Project R103) documented 50 mussel beds in Prince William Sound (PWS) and 9 on the Kenai and Alaska Peninsulas with underlying sediment concentrations greater than 1700 Fg/g total petroleum hydrocarbons (TPH) wet weight; 25 of the beds in PWS had concentrations in excess of 10,000 Fg/g TPH. The highest oil concentrations found in animals or sediments in 1991 and 1992 by any researchers in the *Exxon Valdez* spill area were in mussel beds and underlying sediments in PWS. Persistent high concentrations of hydrocarbons in mussels were identified as a possible source of impacts in several consumer species and could also impact human subsistence users.

Attempts to manipulate mussel beds to reduce hydrocarbon levels in 1992 and 1993 (projects R103-1 and 93036) were minimally intrusive and minimally effective. Small scale removal of strips of mussels to increase water circulation through the beds and thereby reduce hydrocarbon levels did not significantly lower hydrocarbon concentrations in sediments or mussels. Adult mussels from the surrounding bed recolonized exposed areas within three months, thus preventing further hydrocarbon flushing. Transplanting small patches of oiled mussels to nearby clean sediments reduced hydrocarbons in those mussels, but mussel mortality was high. (Babcock et al. 1998.). Overall hydrocarbon concentrations in the five manipulated beds remained high (Babcock et al.1996).

The scale of restoration was increased in 1994 (project 94090) at the request of Chenega Bay residents. We manually removed oiled mussels, replaced oiled sediments underlying the mussels with clean sediments, and replaced mussels onto the clean sediments in 12 of the most impacted mussel beds. Hydrocarbon levels in the clean replaced sediments remained low from late summer 1994 through early summer 1995, and total polyaromatic hydrocarbons (TPAH) in mussels were greatly reduced by 1995. However, in 1996 when restored beds were last sampled, TPH concentrations in sediments directly under the mussels ranged from 340 to 9000 mg/g, indicating recontamination in 6 of the 12 beds. Mussel densities showed overall decline in most restored beds from the fall of 1994 to summer 1995. Declines were also observed in reference beds and therefore were not necessarily linked to restoration (Babcock et al.1998.).

In most untreated beds, hydrocarbon concentrations in mussels and underlying sediments declined at variable rates. Environmental differences between sites as well as differences in the distribution and amount of subsurface oil affected the rate of decrease. In 1995, 16 sampled mussel beds in PWS remained oiled; TPH in sediments ranged up to 20,000 mg/g wet weight and TPAH in mussels ranged up to 4.5 mg/g dry weight. Significant natural reductions in hydrocarbon concentration were observed in roughly half of the beds surveyed. Concentrations should reach background levels within three decades of the spill in these beds. (Background

concentrations are defined as 50 ug/g TPH wet weight in sediments and 0.09 mg/g TPAH dry weight in mussels, based on minimum detection limits of analytical instruments and historical data from unoiled sites). The 16 untreated beds have not been sampled since 1995; three of them were still visibly oiled in the spring of 1997.

Hydrocarbon concentrations in other invertebrates in mussel beds have been undersampled, considering these species may also be a pathway for residual oil from sediments to vertebrate species that are still impacted (e.g. have elevated levels of P450 or show negative effects on their populations). Hydrocarbon (TPAH) concentrations in littorine snails, prey of harlequin ducks and black oystercatchers, ranged from 4 to 27 mg/g dry wt. in several 1989 samples [Exxon Valdez Trustee Hydrocarbon Database (EVTHD]. Shigenaka (1997) reported that PAH concentrations in drills and littorines were 1 and 2 orders of magnitude lower respectively than concentrations in mussels at the same site (Smith Island, Prince William Sound in 1990). Concentrations in littorines (*Littorina sitkana* and *L. scutulata*) in 10 mussel beds in the spill area in 1993 were generally not more than 1 order of magnitude lower than concentrations in mussels from the same bed. (Project 99090, unpublished data) Limpets (2 samples) and *Macoma* spp. clams are the only other harlequin prey (other than mussels) that are reported in EVTHD. Prey notably missing from that database are hermit crabs (*Pagurus* spp.), drills (*Nucella* spp.), nemerteans, and annelids, all occasional in the beds we have sampled since 1991. Because crabs, drills, and worms are not filter feeders, they are expected to have lower concentrations of TPAHs than mussels in the same bed, but they could add to the body burden of animals who also prey on mussels or could be a pathway for oil to predators who do not eat mussels. For example, pigeon guillemots, who do not eat mussels, have been observed feeding hermit crabs to their chicks. Masked greenling, a nearshore fish species, was found to have elevated levels of P450 in oiled areas (Holland-Bartels, 1998), but the source of contamination is not clear. In cooperation with restoration project 99375, our project will investigate the link between hydrocarbons in sediment, in closely associated invertebrates, and in nearshore and intertidal fishes.

Clams (*Prototheca, Saxidomus,* and *Macoma* spp.) and cockles (*Clinocardium*) were well sampled soon after the spill by damage assessment studies, but not in recent years (EVTHD). Clams and cockles are common in areas below mussel beds that we have sampled; oil chronically released from mussel bed sediments may impact the communities lower in the intertidal. One *Prototheca* sample we collected in 1993 below a particularly oily mussel bed, contained 4.5 mg/g TPAH, 4 times the mean concentration of mussels in the bed. Otter craters, common below mussel beds sampled since 1991 often had oil sheen in them. Hydrocarbons in clams and cockles may still be affecting predators. *Macoma* spp are consumed by harlequin ducks, who are still listed as Anot recovering@ from the spill; Sea otters and black oystercatchers, Arecovering@ species, consume *Prototheca, Saxidomus,* and *Clinocardium.*

Chemical analysis of samples collected in 1999 will begin in the summer of 1999, but will be completed in fiscal year 2000. Completion of chemical and data analyses is needed to 1) evaluate the effectiveness of mussel bed restoration techniques, 2) evaluate natural recovery rates with respect to modeled rates of recovery 3) examine the degree and pattern of weathering of oil in both restored and untreated beds, 4) assess mussel bed health and 5) examine the hydrocarbon concentrations in other invertebrate fauna in oiled mussel beds to look for links to vertebrate

species that are still impacted. The final report should provide a comprehensive picture of recovery in both restored and naturally recovering mussel beds.

NEED FOR THE PROJECT

A. Statement of Problem

Mussels remain an important food source in PWS intertidal communities, particularly for some predators (e.g. harlequin ducks, sea otters, and black oystercatchers) whose recovery is not yet certain. Additionally, mussel beds provide habitat for many other invertebrate species, which are also prey, directly or indirectly, of impacted species. Continued monitoring of hydrocarbons in mussel beds is warranted until this contaminated habitat has fully recovered. Human subsistence users need to know whether mussels and other species trophically linked to the beds are oil free. Untreated mussel beds have not been sampled since 1995, so their hydrocarbon levels are unknown. The patterns of concentration decline from 1991 to 1995, and observations of visible oiling in some mussel beds in early 1997, indicate that many beds have not returned to pre-spill concentrations. Sediment recontamination in half of the restored beds necessitates further monitoring of these beds.

B. Rationale/ Link to Restoration

Human subsistence harvesters and researchers studying mussel predators need to know if petroleum hydrocarbons still persist in mussel beds. Although the areal extent of contaminated mussel beds is small in proportion to the total area of beds in PWS, the oiled beds are the worst remaining known source of *Exxon Valdez* Oil (EVO) contamination that is biologically available. Other known areas of remaining high contamination are high in the intertidal and armored with asphalt and cobble or boulders (Shigenaka, 1997). Monitoring the gradual return to pre-spill conditions of these beds is basic to all other *Exxon Valdez* Oil Spill (EVOS) studies.

The long term effectiveness of natural recovery and restoration techniques should be assessed to provide guidance in the event of other spills. Oiled beaches remain a problem for PWS residents, prompting this study and other chemical restoration activities.

C. Location

The mussel beds to be evaluated are in the oil-impacted areas of PWS (Knight Island, Disk Island, Eleanor Island, Chenega Island, Latouche Island, Squirrel Island, and Applegate Island) and two not impacted areas, Olsen Bay in eastern PWS and Drier Bay on Knight Island. Residents of Chenega Bay use the beaches near several of the oiled mussel beds.

COMMUNITY INVOLVEMENT AND TRADITIONAL ECOLOGICAL KNOWLEDGE

The results will be reported in non-technical terms to the Chenega Bay Village Council in writing, and if the Council so requests, at a public meeting in Chenega Bay as well. Students

from the Youth Area Watch Program, especially those from Chenega Bay will be invited to participate in sampling.

PROJECT DESIGN

A. Objectives

1. Measure hydrocarbon concentrations in mussels and underlying sediments, and mussel densities, in beds that were restored in 1994 to evaluate degree of recontamination and to assess mussel bed health. Similar measures will be taken in uncleaned control beds for comparison.

2. Measure the hydrocarbon concentrations in mussels and underlying sediments and mussel densities in untreated mussel beds that remained contaminated with EVO in 1995. Similar measures will be taken in uncleaned control beds for comparison.

3. Measure the hydrocarbon concentrations in selected invertebrate fauna associated with both categories of mussel beds. We will target prey species of vertebrate species still not fully recovered from the spill. (harlequin duck, pigeon guillemot, sea otter, black oystercatcher) and of vertebrate species that may be prey of the impacted species (nearshore forage fish).

B. Methods

Our working hypotheses are 1) that the beds restored in 1994 have remained clean and intact and 2) that sediment and tissue hydrocarbon concentrations in untreated oiled PWS mussel beds have returned to pre-spill levels. Data to be collected are TPH (sediments) and TPAH (mussels and other invertebrates) concentrations and faunal densities (e.g. mussels/m^2).

Objective 1

Site Selection

Sites to be sampled in 1999 include those restored in 1994 and adjacent uncleaned beds that represent natural restoration.

Restored Mussel Beds Proposed for sampling in 1999

Beach Segment*	Geographic Name	Notes
CH10B-2A	Chenega Island	originally sampled as 2 beds, now as 1 bed with 3 zones
CH10B-2B	Chenega Island	
CH10B-2C	Chenega Island	
CH10B-2D	Chenega Island	uncleaned reference bed
DI067A-1	Disk Island	
DI067A-2AL	Disk Island	
DI067A-2AR	Disk Island	

DI067A-2B	Disk Island	
DI067A-2C	Disk Island	uncleaned reference bed
EL011A-B	Eleanor Island	
EL011A-C	Eleanor Island	
EL011A-D	Eleanor Island	uncleaned reference bed
KN113B-2	Herring Bay	sample 2 depths and up slope area
SL001D-2	Squirrel Island	

* nomenclature follows the interagency Shoreline Cleanup Assessment Team (SCAT) shoreline assessment segment designations. Where we sampled multiple oiled mussel beds within one segment, they are designated with a number following the segment number.

Sampling

Within each of these beds, triplicate pooled samples of mussels and of sediments will be collected at 8 random spots and placed in hydrocarbon-free glass jars. Approximately 20 mussels, will be collected by hand; the sediments will be collected with a hydrocarbon-free spoon. In 1992, intensive sampling indicated 3 distinct zones of oiling at CH010B-2A (Harris et al. 1996). These zones were obscured when the bed was cleaned, at least to a depth of 12 cm, but the recontamination pattern shown in 1996 samples indicates the re-formation of zones. Therefore, at CH010B-2A the initial zones will be re-sampled, so that triplicate pooled samples will be collected from each zone. At most cleaned beds and at the 3 uncleaned reference beds, sediments will be sampled at 3 depths: surface (0-2 cm), deep (4-6 cm), and below replaced sediment depth (>12 cm) to enable us to determine if oil below the replaced layer has recontaminated surficial sediments. Sediments will be sampled at only two depths, surface and deep, at the Herring Bay restored bed (KN113B-2) because oiled sediments were removed down to bedrock. In that bed, the recontamination source in 1996 appeared to be oiled sediments up slope of the restored area so the up slope area will be re-sampled.

All samples will be immediately cooled, and frozen within 6 h. Samples will be given a unique number in the field to facilitate sample tracking through chemical and data analysis and inclusion in a restoration hydrocarbon data base. Mussel densities will be estimated by counting mussels in 2 of the 4 frames within a 0.25 m x 0.25 m sampling quadrat in at least 8 subsites along the transect and will be expressed as mussels/m5. In the same 8 quadrats, we will count the number of targeted invertebrates and express densities as species name/m^2.

Chemical Analysis

Sediment samples will be analyzed by ultraviolet fluorescence as adapted from Krahn et al.(1991) and used successfully at Auke Bay Laboratory since 1992. Concentrations will be reported in mg total hydrocarbons /g wet weight of sediment (TPH). All mussel, other invertebrate samples, and selected sediments will be analyzed by gas chromatography/mass spectroscopy (GC/MS) for quantitative measurements of individual polynuclear aromatic hydrocarbons (PAH) (Larsen et al., 1992); concentrations will be reported in mg total PAH / g dry weight of mussel or sediment (TPAH). Perylene, which is biogenic, will not be included in TPAH. At least one sediment sample from each bed will be analyzed by GC/MS to examine the degree and pattern of weathering of EVO if TPH levels in that bed are above pre-spill levels (50 mg/g).

Data Analysis

Hydrocarbon data will be tested for normality and log transformed if necessary to carry out ANOVA to examine differences between sites (1999 data) and sampling times at each site (using 1992-1999 data). A longer time series will be possible for some sites where hydrocarbon samples have been collected since the mid 1970's. Assuming triplicate sampling as proposed, statistical power will be 80% (alpha =0.05) to detect a change or difference of 60% at two sites or two sampling times at the same station (Kinetic Laboratories, 1993). Weathering of EVO will be examined using first-order kinetic loss rate modeling (Short and Heintz 1997)
Densities of targeted invertebrates in restored beds will be compared with densities in the appropriate unrestored bed(s).

Objective 2

Site Selection:

The 14 oiled mussel beds selected for sampling still contained > 0.09 mg/g TPAH in mussel tissues and/or > 200 mg/g TPH in underlying sediments in 1995. KN004-2 was not sampled in 1995, but was selected because TPAH in mussels was 0.6 mg/g in 1994. Olsen Bay and Barnes Cove, two unoiled reference beds monitored since 1991, will be also be sampled.

Unrestored Mussels Beds Proposed for Sampling in 1999:

Beach Segment*	Geographic Name	Notes
AE005A-2	Applegate Island	
CH009A-3	Chenega Island	
DI067A-6	Disk Island	sampling 2 sediment depths
EL013A	Eleanor Island	sampling of 2 zones, 2 sediment depths
EL015A	Eleanor Island	
EV036A	Evans Island	
KN004-2	Bay of Isles	
KN119A	Herring Bay	
KN133A-1	Herring Bay	sampling of 3 zones, 2 sediment depths
KN136A-1	Bay of Isles	
KN136A-3	Bay of Isles	sampling 2 sediment depths
KN505A	Herring Point	
KN575A	Barnes Cove	unoiled reference
LA015E-2	Latouche Island	sampling 2 sediment depths
MA002C	Foul Bay	
OLSEN	Olsen Bay	unoiled reference

Three additional small untreated beds will be sampled, but because these will be sampled similarly to the restored beds they are included under objective 1.

Sampling:

In the untreated beds, mussel and sediment sampling will follow methods developed by this project in previous years (Babcock et al. 1996). In most of the above beds, a transect, generally

30 m long and parallel to the water line (as topography allows), will be established through the middle of a mussel bed. Triplicate pooled samples of 20-25 mussels each will be collected along the transect and within 1 m above and below the transect and placed in three hydrocarbon (HC)-free jars. Other invertebrates will also be collected along the transect. Three pooled subsamples of surficial sediment (0-2 cm deep) under the mussels will be collected with a HC-free stainless steel spoon into each of three HC-free glass jars. A sample of sediments 4-6 cm below the surface will be taken in five beds where samples at that depth have been collected since 1992 to see if initial patterns of oiling related to depth still persist (see table above).

Two beds, KN133A and EL013B, had zones of significantly different concentrations of oil in 1992 (Harris et al., 1996). These beds will be re-sampled by the zones observed in 1992 (rather than by transect) to see if the initial within-bed oiling pattern persists as concentrations have declined. In each zone, three pooled replicate samples of sediments at depths 0-2 cm, three pooled replicate sediment samples at depths 4-6 cm, and three pooled replicate samples of mussels will be collected. Targeted invertebrates will be collected over the whole bed; replicate samples will be collected if density permits. Sample handing, chemical analysis, and data analysis will follow the procedures discussed under objective 1.

Chemical and Data Analysis

Chemical analysis of samples and data analysis will follow methods described for objective 1.

Objective 3.

Site Selection

Selected invertebrates will be collected in all beds sampled under objectives 1 and 2.

Sampling

Invertebrate groups selected for collection are littorines, drills, limpets, chitons, annelids, nemerteans, hermit crabs, clams, and cockles. The latter two groups will be collected below (lower in the intertidal) mussel beds; others will be collected in the bed. Observations in the mussel beds since 1991 indicate that distribution of these select invertebrates is patchy and densities are low, so no specific sampling protocol is proposed; samples will probably have to be collected throughout the bed or the intertidal area below the bed to obtain enough for a tissue sample (5 g) of each species. When densities permit, replicate samples of each species will be collected. Samples will be placed in HC-free glass jars and handled as mussel samples are.

Chemical and Data Analysis

Methods follow those for mussel tissue, except that littorines will not be dissected from their shells. A subset of littorines will be dissected and dried to determine the relationship between littorine tissue dry weight and littorine whole body dry weight, so that hydrocarbon concentrations in littorines may be compared with that in mussels and other animals in which just the tissue is analyzed.

Summary of Sampling and Analytical Methods

Sample Type	Objective 1 Restored Beds	Objective 2 Unrestored Beds	Objective 3 Other Invertebrates	Totals

UV Sediment	141	78		219
GC/MS				
Sediment*	6	13		(19)
Targeted invertebrates+			20	20
Mussels	48	51		99
				338

* Sediments to be analyzed by GC/MS are subsamples of UV sediment samples and therefore do not affect sample totals for each objective. The maximum number of sediments to be analyzed by GC/MS is 19. Sediments will not be analyzed by GC/MS if TPH concentrations are not above pre-spill levels in a bed.

+ maximum number of samples to be collected is estimated at 20, depending on the abundance of selected species

C. Cooperating Agencies, Contracts, and Other Agency Assistance

We will share a sampling platform in 1999 with Restoration Project 99379, Assessment of Risk to Residual Exxon Valdez Oil in PWS Using P450 Activity in Fishes. We will also suggest sample sites to ensure sampling coordination with that project so that we may be able to support that project with apprropriate chemical data. The only contracts involved will be contract labor for chemical sample processing.

SCHEDULE

A. Measurable Project Tasks for FY 2000 (October 1, 1999 - September 30, 2000)

Jun.-Sept. FY99	initiate hydrocarbon analyses (60% complete by Sept.30)
Oct. - Dec.	complete hydrocarbon analyses
Dec.-Jan.	data analysis
Jan.	EVOS workshop
April	final report
May-Sept.	publication preparation

B. Project Milestones and Endpoints

Data analysis and reporting for samples collected in summer of 1999 will be completed in winter 2000, submission of an final report in April of 2000, and preparation of a more public final report or presentation.

C. Completion Date

If our working hypotheses are shown true (significant amounts of oil are *not* found in PWS mussel beds), our objectives will have been met in April of 2000. If the hypotheses prove false, and significant amounts of oil *are* found, another round of sampling will be proposed probably in 2002.

PUBLICATIONS AND REPORTS

FY99: none
FY00: final reports (one to the EVOS trustees, one for the general public) and 2 manuscripts; Effectiveness of Manual Restoration of Oiled Mussel beds, Natural Recovery of Mussel beds Impacted by EVO.

PROFESSIONAL CONFERENCES

FY00: EVOS workshop

NORMAL AGENCY MANAGEMENT

NOAA/NMFS has statutory stewardship for most living marine resources; however, if the oil spill had not occurred, NOAA would not be conducting this project. NOAA/NMFS proposes to make a significant contribution (as stated in the proposed budget) to the operation of this project, making it truly cooperative.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

Logistics of sampling in 1999 will be tied as closely as practical to the sampling efforts of the Pristane Monitoring project. The potential for overlap is great since the same personnel will be involved. Data and results will be shared with other projects, project 99379 (as discussed) and projects involving mussel predators (Nearshore Vertebrate Predators 99025, Alaska Predator Ecosystem Experiment (99163), and Differentiation/Interchange of Harlequins. Students from the Youth Area Watch (99210) will be invited to participate in sampling. Cooperative efforts in 2000 will largely be data sharing and will result in synthesis of information from other projects, particularly those focusing on predators of mussels and other musel bed invertebrates.

PROPOSED PRINCIPAL INVESTIGATORS

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2000 EXXON VALDEZ TRUS DUNCIL PROJECT BUDGET
October 1, 1999 ember 30, 2000

approved TC 8-9-99

Budget Category:	Authorized FY 1999	Proposed FY 2000	[redacted]
Personnel	$96.5	$46.4	
Travel	$15.2	$2.2	
Contractual	$11.3	$6.0	
Commodities	$11.7	$2.0	
Equipment		$0.0	LONG RANGE FUNDING REQUIREMENTS
Subtotal	$134.7	$56.6	
General Administration	$15.3	$7.4	Estimated FY 2001 / Estimated FY 2002
Project Total	$150.0	$64.0	$0.0 / $50.0
Full-time Equivalents (FTE)		0.6	[redacted]
	Dollar amounts are shown in thousands of dollars.		
Other Resources	$49.5	$37.0	

Comments:

NOAA's Contribution:
Personnel: Habitat Program Manager, S. Rice .5 mo. @1 1.3mo, J.W. Short .5 mo @8.4mo, Co- PI Biologist C. Brodersen 1 mo @ 6.7K, Co-PI, P Harris 1 mo @6.2mo. statistical advisor and editor, Mark Carls, 1 mo. @ 7k

Other: NOAA also contributed the cost of analysis of 1996 sediment samples from restored beds 7K for total NOAA contribution of 37K

FY00

Prepared:4/12/99

Project Number: 00090
Project Title: Monitoring of Oiled Mussel Beds in Prince William Sound
Agency: NOAA

FORM 3A
TRUSTEE
AGENCY
SUMMARY

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 2000
Harris	Zoologist	GS-11/2	3.0	6.2		18.6
Brodersen	Fisheries Research Biologist	GS-11/7	1.0	6.7		6.7
						0.0
Chem Lab personnel for analyses:						0.0
Holland	Chemist	GS-11/6	1.0	6.7		6.7
Larsen	Chemist	GS-11/6	0.5	6.7		3.4
Lunasin	Chemist	GS-9/6	2.0	5.5		11.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		7.5	31.8	0.0	
					Personnel Total	$46.4

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 2000
					0.0
Juneau- Anchorage Restoration Workshop	0.4	1	3	0.2	1.0
					0.0
travel to SEATAC meeting to present paper, 1 person	0.6	1	3	0.2	1.2
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$2.2

FY00

Prepared:4/12/99

Project Number: 00090
Project Title: Monitoring of Oiled Mussel Beds in Prince William Sound
Agency: NOAA

FORM 3B
Personnel & Travel DETAIL

Contractual Costs:	Proposed FY 2000
Description	
contract labor chem lab, 2 month at 2.5K/month	5.0
publishing costs	1.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$6.0

Commodities Costs:	Proposed FY 2000
Description	
Chem Lab supplies for analyses (solvents , glassware, gasses)	2.0
Commodities Total	$2.0

FY00

Prepared:4/12/99

Project Number: 00090
Project Title: Monitoring of Oiled Mussel Beds in Prince William Sound
Agency: NOAA

FORM 3B
Contractual & Commodities DETAIL

2000 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 2000
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency
computer, printer	4	NOAA
GC/MS	1	NOAA
HPLC	1	NOAA
GPS	1	NOAA
UVF radio	1	NOAA
camera	1	NOAA
freezer	1	NOAA

FY00

Prepared:4/12/99

Project Number: 00090
Project Title: Monitoring of Oiled Mussel Beds in Prince William Sound
Agency: NOAA

FORM 3B
Equipment
DETAIL

60100

Approved TC 8-9-99

Public Information, Science Management and Administration

Project Number:	00100
Restoration Category:	Public Information, Science Management and Administration
Proposer:	Restoration Office
Lead Trustee Agency:	All Trustee Agencies
Alaska SeaLife Center:	No
Duration:	Ongoing
Cost FY 96:	$3,439,600
Cost FY 97:	$2,940,500
Cost FY 98:	$2,796,300
Cost FY 99:	$2,495,700
Cost FY 00:	$2,033,900
Cost FY 01:	TBD
Cost FY 02:	TBD
Geographic Area:	N/A
Injured Resource/Service:	All

ABSTRACT

Project 00100 provides overall support for science management, public involvement and administration of the restoration program through the Restoration Office. This includes funding support for the Trustee Council staff working at the direction of the Executive Director, management of the scientific peer review process, public involvement efforts including the active participation of the 17-member Public Advisory Group (PAG), and support for Trustee agency participation in the restoration program.

INTRODUCTION

The Trustee Council, established under the terms of a court approved civil settlement in 1991, is comprised of six members: the Commissioner of the Department of Environmental Conservation; the Commissioner of the Department of Fish and Game; the Attorney General of the State of Alaska; the Secretary of the Department of the Interior; the Secretary of the Department of Agriculture; and the Director of the National Oceanic and Atmospheric Administration. In order to manage the settlement funds as directed by the Trustee Council, the Public Information, Science Management and Administration project (00100) provides for overall implementation of the restoration program.

This project makes extensive use of existing Trustee Council agency structures to keep administrative costs to a minimum. The proposed Project 00100 budget continues to make reductions in administrative and management costs as the overall work plan is reduced as directed by the Trustee Council. As proposed for FY 00, the budget of $2,033,900 has been reduced $461,800 below the FY 99 authorized amount.

Components of the 00100 Public Information, Science Management and Administration project include:

Alaska Resources Library and Information Services - The Alaska Resources Library and Information Services (ARLIS) serves as a central access point for information generated through the Trustee Council restoration process. In addition, ARLIS acts as the public repository for reports and other materials generated as a result of the cleanup, damage assessment and restoration efforts following the *Exxon Valdez* oil spill.

In FY 00, the Trustee Council will continue to support one librarian at ARLIS. In addition, the Council will also contribute funding to support the building lease and other expenses. Council funding in FY 01 and beyond will be assessed this year.

Chief Scientist and Peer Review Process - The Trustee Council and principal investigators need access to the best possible scientific knowledge and understanding concerning injured resources and services. This information has been provided continuously by the Chief Scientist and expert peer reviewers since the injury assessment process started in 1989. The Chief Scientist draws upon a variety of qualified individuals with expertise in specific fields who provide individual reviews of project proposals as well as peer review of annual and final project reports. FY 00 costs for this component have been reduced in accordance with the overall reduction in the work plan.

Restoration Office - The Restoration Office component includes funding for the Executive Director and staff. The Restoration Office provides for basic restoration program planning and implementation; intergovernmental and interagency coordination; public information; and overall program management functions of the Trustee Council.

Restoration Office staff maintain the Trustee Council's financial records including preparation of the monthly, quarterly and annual financial reports; provide a quarterly report regarding the status of projects funded by the Trustee Council; and work closely with the Chief Scientist in facilitating the scientific review and evaluation process.

The budget also includes funding for public involvement and outreach. This includes funding associated with public meetings and the annual workshop; Public Notice and advertising expenses; all work plan documents (i.e., annual Invitation, Draft Work Plan, Final Work Plan, Annual Report); the Restoration Update newsletters; the Restoration Notebook series; other publications; and postage for mailings. Funding is also included for the annual external audit. In addition, this budget includes funding for lease and operating costs for offices in Anchorage (645 G Street) and a small Juneau office (in the Federal Office Building).

In FY 00, three positions have been deleted: the Director of Operations (.5 FTE), Microcomputer Technician (1.0 FTE), and Natural Resources Manager (1.0 FTE). In addition, an Administrative Assistant has been transferred from the PAG component. This position will continue to provide services to the PAG and the general public, but will also be tasked, together with two months of a contractor's time, with developing and beginning implementation of a plan for archiving and final disposition of all EVOS documents.

Public Advisory Group - The Public Advisory Group (PAG) consists of 17 members, and two *ex-officio* members from the Alaska State Legislature. The PAG includes representatives of major interest groups (e.g., tourism/recreation, commercial fishing, Native landowners, forest products, subsistence, local government, science and academia) and five members representing the public-at-large. The PAG helps provide meaningful public involvement including guidance and input to the Trustee Council on such items as the annual work plans, budgets, and overall implementation of the *Restoration Plan.*

Major changes proposed for FY 00 include transfer of an Administrative Assistant to the Restoration Office component, elimination of the annual field trip, and reduction from four in-person meetings to two in-person and two teleconference meetings.

Liaison Support - The FY 00 budget for Liaison Support includes funding for Trustee agency liaisons as well as travel costs for Trustees to attend Council meetings. Consistent with reductions to the overall work plan, liaison support for FY 00 has been reduced from six months to four months.

NEED FOR THE PROJECT

The project provides the essential management and administration necessary to efficiently implement the restoration program.

A. Statement of the Problem

Implementation of the restoration program as directed by the Trustee Council and guided by the *Restoration Plan* requires overall scientific management, meaningful public involvement and program administration.

B. Rationale/Link to Restoration

Project 00100 provides essential support to implement the restoration program as directed by the Trustee Council and guided by the *Restoration Plan.*

C. Location

The Trustee Council maintains the Restoration Office in Anchorage (645 G Street, Anchorage, Alaska, 99501) and a small office in Juneau (709 West 9th Street, Juneau, Alaska, 99801).

COMMUNITY INVOLVEMENT AND TRADITIONAL ECOLOGICAL KNOWLEDGE

Project 00100 supports various aspects of community involvement. This includes public information efforts to assist the general public and spill community residents to learn about and more effectively participate in the restoration program process. The FY 00 budget also reflects support for some costs (rent, phone-fax, copying) associated with the work of the Community Involvement Coordinator (see project /052) who works out of the Restoration Office.

PROJECT DESIGN

A. Objectives

The fundamental objective of the Public Information, Science Management and Administration project is to implement a comprehensive, balanced restoration program consistent with the *Restoration Plan* and Trustee Council actions.

Specific objectives for FY 00 include:

1. Implement the authorized FY 00 Work Plan.

2. Provide access to local, state, national, and international users of restoration program information through the Alaska Resources Library and Information Service (ARLIS).

3. Compile, manage, synthesize, and disseminate information about the restoration program, including: (1) production of the Restoration Update newsletter four times per year; (2) publication of the Restoration Notebook series that profiles the restoration program knowledge regarding specific injured resources, (3) publication of the Annual Status Report, and (4) updating the Trustee Council's web page.

4. Oversee and manage the science program, including the peer review and project evaluation process, under the direction of the Chief Scientist and the Science Coordinator.

5. Refine the draft Gulf Ecosystem Monitoring Plan (GEM).

6. Sponsor the annual Restoration Workshop in January 2000, bringing together scientists, agency staff, Trustee Council staff, academia, and members of the general public to review the status of the restoration program through the adaptive management process.

7. Continue habitat evaluations, appraisals and negotiations with willing sellers under both the Large Parcel and Small Parcel Habitat Protection Programs as applicable. Develop recommendations on the future of these programs, as directed by the Trustee Council in their resolution on the Restoration Reserve.

8. Conduct regular meetings of the Public Advisory Group (PAG) as a means of obtaining public input into the Trustee Council process.

9. Work with the Community Involvement Coordinator and Community Facilitators to inform and involve spill area residents about restoration program activities and findings.

10. Develop the FY 01 Work Plan, including publication of the initial Invitation to Submit Restoration Proposals and preparation of a Draft Work Plan for public comment.

11. Oversee and manage current and prior years' projects funded by the Trustee Council, including the production of quarterly and annual reports.

12. Complete a sixth independent audit.

13. Track equipment purchased with settlement funds.

B. Methods

All Trustee Council operations are governed by the state and federal laws and regulations that apply to the respective agencies that comprise the Trustee Council.

C. Cooperating Agencies, Contracts and Other Agency Assistance

Multiple agencies are involved in the implementation of Project 00100. The Alaska Department of Fish and Game is the administering agency for most of the operations functions, although the National Oceanic and Atmospheric Administration receives funding to pay for lease costs for the Juneau office. In addition, the Alaska Department of Natural Resources administers the contract for the Chief Scientist/peer review process. The U.S. Department of the Interior receives funding for support in the Federal Budget Office as a well as funding for participation of a federal officer associated with the Public Advisory Group and funding to support the operations at ARLIS. All Trustee agencies receive funding for liaison support.

A variety of contracts will be administered under Project 00100, including the Chief Scientist/peer review contract and the annual external audit. A number of small contracts will also be administered under Project 00100 for support services such as equipment maintenance and publication of documents.

SCHEDULE

The Trustee Council operates on the Federal Fiscal Year (October 1 - September 30).

A. Measurable Project Tasks for FY 00 (October 1, 1999 - September 30, 2000)

Measurable project tasks include holding the Annual Workshop and successful development of the FY 01 Work Plan (including publication of the initial Invitation, followed by a Draft Work Plan for public comment and then a Final Work Plan following Trustee Council action). Other measurable tasks include meetings of the Trustee Council and the Public Advisory Group, preparation of quarterly financial reports and quarterly project status reports, preparation of habitat program status reports, completion of a sixth independent audit, and publication of the Restoration Update newsletter and the annual restoration program status report.

B. Milestones and Endpoints

Project Authorization Consistent with Trustee Council action:	October-September
Public Review of GEM:	October-December
Trustee Council action on the Final FY 00 Work Plan:	December
Publish FY 00 Final Work Plan:	December
Publish Newsletter	December
Annual Restoration Workshop:	January
Complete FY 00 Audit:	January
Scientific Review of GEM:	January-September
Publish FY 01 Invitation:	February

Publish Newsletter	March
Receive FY 01 Project Proposals:	April
Scientific/Technical/Policy/Legal Review of Proposals:	April-August
Publish FY 01 Draft Work Plan:	June
Publish Newsletter	June
Trustee Council action on FY 01 Work Plan:	August
Executive Director authorizations to proceed:	August-September
Publish Newsletter	September

C. Completion Date

Project /100 will continue throughout the life of the restoration program.

PUBLICATIONS AND REPORTS

See above (Measurable Project Tasks).

NORMAL AGENCY MANAGEMENT

Funding in the Project 00100 budget supports the science management, public involvement and administrative functions that are required to implement the *Restoration Plan.* The Restoration Office and the functions included within the Project 00100 budget are budgeted for the sole purpose of supporting restoration program activities and may not be used for other agency purposes.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

At the direction of the Trustee Council, the Executive Director implements Project 00100 to provide overall coordination and integration of the restoration program. As part of the adaptive management process, the Trustee Council sponsors the annual restoration conference that brings together scientists, federal and state resource agency representatives, and members of the public to review the status of injured resources and services and refine restoration strategies. In addition, all project proposals are peer reviewed with regard to their coordination and integration aspects. Other coordination efforts include working with the agency liaisons and/or project managers to implement the restoration program.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

The most significant changes between FY 99 and FY 00 is continued reduction in funding in parallel with the overall work plan. At the same time, increased effort is being devoted to development the Gulf Ecosystem Monitoring (GEM) plan.

This version in TC packet for 8-9-99 mtng.
Approved TC 8-9-99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	PROPOSED FFY 2000 TRUSTEE AGENCIES TOTALS					
			ADEC	ADF&G	ADNR	USFS	DOI	NOAA
			$44.8	$1,374.0	$404.6	$37.4	$110.2	$62.9
Personnel	$1,244.4	$935.0						
Travel	$139.7	$89.0						
Contractual	$842.4	$796.1						
Commodities	$27.0	$24.5						
Equipment	$10.0	$4.8	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$2,263.5	$1,849.5	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$232.2	$184.4						
Project Total	$2,495.7	$2,033.9	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	16.9	12.3						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

This budget reflects further reduction of expenses associated with administration of the restoration program .

This budget:

* eliminates remaining funding for the Director of Operations position (-0.5 FTE)
* eliminates one librarian position at ARLIS (-1 FTE)
* eliminates the Network Administrator position (-1 FTE) and moves funds to the contractual line for network and web support
* eliminates the Natural Resources Manager II in the operations component (-1.0 FTE)
* reduces the Federal Budget Officer position from 4 mos. to 2 mos.
* reduces the agency liaison positions from 6 mos. each to 4 mos. each

reduces the Chief Scientist's contract by $36.3

2000

PREPARED: 7/27/99

Project Number: 00100
Project Title: Public Information, Science Management and Administration
Agency: Multiple

FORM 2A
MULTI-TRUSTEE AGENCY SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	PROPOSED FFY 2000 TRUSTEE AGENCIES TOTALS					
			ADEC	ADF&G	ADNR	USFS	DOI	NOAA
			$0.0	$82.0	$0.0	$0.0	$48.2	$0.0
Personnel	$128.4	$71.3						
Travel	$0.0	$0.0						
Contractual	$44.8	$45.0						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$173.2	$116.3	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$22.4	$13.8						
Project Total	$195.6	$130.1	$126.4	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	2.0	1.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

In FY 2000, one Librarian position will be stationed at ARLIS. The Restoration Office will also contribute funding toward lease/rent and also for subscriptions/acquisitions. Funding for the one Librarian position is anticipated to continue in FY 2001 with funding beyond that point to be assessed at that time in the context of all other restoration program needs.

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: Multiple

SUMMARY

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel	$128.4	$71.3						
Travel	$0.0	$0.0						
Contractual	$0.0	$0.0						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0						
Subtotal	$128.4	$71.3	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$19.3	$10.7						
Project Total	$147.7	$82.0	$81.4	$81.4	TBD	TBD	TBD	
Full-time Equivalents (FTE)	2.0	1.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: AK Dept. of Fish and Game

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs: Name	Position Description	GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	Proposed FFY 2000
Holba	Librarian III	19F	12.0	5.9		71.3
	Subtotal		12.0	5.9	0.0	
					Personnel Total	$71.3

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FFY 2000
				Travel Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: AK Dept. of Fish and G

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed
Description	FFY 2000
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: AK Dept. of Fish and Game

FORM 3B
Contractual & Commodities DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: AK Dept. of Fish and G

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel	$0.0	$0.0						
Travel	$0.0	$0.0						
Contractual	$44.8	$45.0						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0						
Subtotal	$44.8	$45.0	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$3.1	$3.2						
Project Total	$47.9	$48.2	$45.0	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	0.0	0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: Dept. of the Interior

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
	Subtotal		0.0	0.0	0.0	
					Personnel Total	$0.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
				Travel Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: Dept. of the Interior

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
Building Lease (contribution to ARLIS)	24.0
Subscriptions, acquisitions, other expenses (contribution to ARLIS)	21.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$45.0

Commodities Costs:	Proposed
Description	FFY 2000
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: Dept. of the Interior

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - ARLIS
Agency: Dept. of the Interior

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000						
Personnel	$0.0	$0.0						
Travel	$0.0	$0.0						
Contractual	$380.0	$343.7						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$380.0	$343.7	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$20.1	$19.4						
Project Total	$400.1	$363.1	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	0.0	0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

In FFY 00, funding for the Chief Scientist peer review contract is reduced by $36.3 from FFY 99.

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Chief Scientist and Peer Reviewers
Agency: AK Dept. of Natural Resources

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
	Subtotal		0.0	0.0	0.0	
					Personnel Total	$0.0

Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FFY 2000
					Travel Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Chief Scientist and Peer Reviewers
Agency: AK Dept. of Natural Re ces

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

Printed: 7/20/00

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
Contract to provide scientific support to the Trustee Council, including the services of the Chief Scientist and for Peer Reviews. A contract is currently in place with annual options for renewal. The contractor is paid monthly based upon services rendered monthly, throughout the entire fiscal year.	343.7
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$343.7
Commodities Costs:	Proposed
Description	FFY 2000
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Chief Scientist and Peer Reviewers
Agency: AK Dept. of Natural Resources

FORM 3B
Contractual & Commodities DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Chief Scientist and Peer Reviewers
Agency: AK Dept. of Natural Resources

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	PROPOSED FFY 2000 TRUSTEE AGENCIES TOTALS					
			ADEC	ADF&G	ADNR	USFS	DOI	NOAA
			$0.0	$1,230.3	$0.0		$20.0	$12.8
Personnel	$804.6	$685.4						
Travel	$46.3	$33.2						
Contractual	$410.5	$400.3						
Commodities	$18.0	$15.5						
Equipment	$10.0	$4.8	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$1,289.4	$1,139.2	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	$142.4	$123.9	FFY 2001	FFY 2002	FFY 2003	FFY 2004	FFY 2005	
Project Total	$1,431.8	$1,263.1	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	10.8	9.2						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

In FFY 00, staffing for the Restoration Office is reduced by 1.5 FTE as a result of the elimination of the Director of Operations position (-0.5 FTE), the Network Administrator (-1.0 FTE) and the Natural Resources Manager (-1.0 FTE). This is partially offset by the transfer of the Administrative Assistant (1.0 FTE) from the PAG component.

2000

Project Number: 00100
Project Title: Administration, Public Information and Scientific Management - Restoration Office
Agency: Multiple

SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	FFY 1999	FFY 2000						
Personnel	$683.4	$668.0						
Travel	$46.3	$33.2						
Contractual	$398.5	$388.3						
Commodities	$18.0	$15.5						
Equipment	$10.0	$4.8	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$1,156.2	$1,109.8	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$123.4	$120.5						
Project Total	$1,279.6	$1,230.3	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	9.5	9.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

Staffing changes proposed for FFY 00 include elimination of the remaining funding associated with the Director of Operations (-0.5 FTE), elimination of the Network Administrator (-1.0 FTE), and transfer of the Administrative Assistant (+1.0) from PAG to Operations.

A portion of the Administrative Assistant II (T Yockey) position in the Anchorage Restoration Office to be funded through ADF&G General Administration funds in the amount of 44.4.

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Offic
Agency: AK. Dept. of Fish and G

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
McCammon	Executive Director		12.0	10.6		127.2
Cramer	Director of Administration		12.0	8.4		100.8
VACANT	Science Coordinator		12.0	8.9		106.8
ELIMINATED	Director of Operations					0.0
Schubert	Project Coordinator		12.0	7.9		94.8
Hunt	Communciations Coordinator		12.0	6.0		71.8
Williams	Executive Secretary		12.0	5.3		63.3
Yockey	Administrative Assistant II *		12.0	4.5		9.2
Womac	Administrative Assistant II		12.0	4.3		52.2
ELIMINATED/CONTRACT	Microcomputer Technician II					0.0
Banks	Receptionist		12.0	3.0		35.8
Overtime					6.0	6.0
* Note: A portion of this position supported with GA funds.	Subtotal		108.0	58.8	6.0	
					Personnel Total	$668.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
In-State Travel					
Anchorage to Juneau (3 staff/1 transcriber for 1 TC meeting)	0.4	4	8	0.2	3.2
Anchorage to Juneau (administrative travel)	0.4	14	30	0.2	11.6
Anchorage to spill area community (3 staff/1 transcriber for TC mtg)	0.2	4	8	0.2	2.4
PAG Field Trip (restoration office staff participation)					0.0
Other community involvement/public meetings	0.2	6	12	0.2	3.6
Car rental (daily rate of $40.00)			14		0.6
Out-of-State Travel					
Anchorage - Washington D.C.	1.4	6	15	0.2	11.4
Car Rental (daily rate of $40.00)			12		0.5
				Travel Total	$33.2

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: AK. Dept. of Fish and Game

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Contractual Costs: Description	Proposed FFY 2000
1999 Audit Engagement	60.0
Phone and fax	33.0
Postage (metered mail 10.0, bulk mail 7.0)	16.0
Courier service	3.5
Building Lease/Parking - 645 G Street (lease $87.6, parking $7.3)	94.9
Annual Restoration Status Report	19.0
Newsletter (4 issues: printing at $1,400 each + bulkmail prep $250 each)	7.1
Annual Invitation	5.5
Final Work Plan	1.8
Draft Work Plan	8.4
Restoration Notebook Series (8 editions with 400 copies each)	2.5
Equipment Maintenance Agreements (copiers, fax machines, postage meter in Anchorage and Juneau)	16.0
Local Area Network/Web Server support contract (out source)	40.0
Public Notice (TC meetings 4.5, annual Invitation 2.0, other meetings 1.5)	8.0
ADA Compliance (special access to meetings)	1.0
Transcription Services	5.0
Teleconferencing	8.0
Staff training	3.0
Aircraft Charters within the Spill Area	4.0
Annual Restoration Workshop (note: base cost of annual science conference)	18.0
Other technical review sessions/workshops	4.0
Other printing and publications	4.0
Meeting space rental (out of building)	1.0
56KB Line /DIS-WAN Access (ATU connect charges/dail-up 0.9, WAN/e-mail 4.2)	5.1
Traveling restoration exhibit display and transportation	0.0
Archive Coordination	14.5
Investment Contract	5.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$388.3

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Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoriation Office
Agency: AK Dept. of Fish and Game

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/20/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Commodities Costs:	Proposed
Description	FFY 2000
Office Supplies	11.0
Local Area Network Software and Upgrades	2.5
Data Processing Supplies	2.0
Commodities Total	$15.5

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: AK. Dept. of Fish and Game

FORM 3B
Contractual & Commodities DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Replacement Computers	2	1.2	2.4
Replacement Printer	1	1.4	1.4
Office Equipment	5	0.2	1.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$4.8

Existing Equipment Usage: Description	Number of Units	Inventory Agency

)00

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Offic
Agency: AK. Dept. of Fish and Game

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
			Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
Personnel	$86.4	$0.0						
Travel	$0.0	$0.0						
Contractual	$0.0	$0.0						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0						
Subtotal	$86.4	$0.0						
General Administration	$13.0	$0.0						
Project Total	$99.4	$0.0						
Full-time Equivalents (FTE)	1.0	0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: AK Dept. of Natural Resources

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
Christman	Natural Resources Manager II		0.0	7.2		0.0
* remainder of position costs under Archeology Project	Subtotal		0.0	7.2	0.0	
					Personnel Total	$0.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
				Travel Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Offic-
Agency: AK Dept. of Natural Re ces

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FFY 2000
Description	
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed FFY 2000
Description	
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: AK Dept. of Natural Resources

FORM 3B
Contractual & Commodities DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: AK Dept. of Natural Res ces

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel	$34.8	$17.4						
Travel	$0.0	$0.0						
Contractual	$0.0	$0.0						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0						
Subtotal	$34.8	$17.4	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$5.2	$2.6						
Project Total	$40.0	$20.0						
Full-time Equivalents (FTE)	0.3	0.2						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: Dept. of the Interior

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
Baldauf	Federal Budget Officer		2.0	8.7		17.4
	Subtotal		2.0	8.7		
					Personnel Total	$17.4

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
				Travel Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Offic
Agency: Dept. of the Interior

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FFY 2000
Description	
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed FFY 2000
Description	
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: Dept. of the Interior

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: Dept. of the Interior

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel	$0.0	$0.0						
Travel	$0.0	$0.0						
Contractual	$12.0	$12.0						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0						
Subtotal	$12.0	$12.0	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$0.8	$0.8						
Project Total	$12.8	$12.8						
Full-time Equivalents (FTE)	0.0	0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

For payment of lease expenses in the Federal Office Building in Juneau (Executive Director's Office). FFY 99 budget figures based on costs as projected by NOAA.

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: National Oceanic & Atmospheric Administration

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
	Subtotal		0.0	0.0	0.0	
					Personnel Total	$0.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
				Travel Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Offic
Agency: National Oceanic & Atr heric Administration

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FFY 2000
Description	
Juneau Federal Building	12.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$12.0

Commodities Costs:	Proposed FFY 2000
Description	
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: National Oceanic & Atmospheric Administration

FORM 3B
Contractual & Commodities DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Restoration Office
Agency: National Oceanic & Atmospheric Administration

FORM 3B
Equipment
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	PROPOSED FFY 2000 TRUSTEE AGENCIES TOTALS					
			ADEC	ADF&G	ADNR	USFS	DOI	NOAA
				$21.4			$6.9	
Personnel	$57.6	$6.0						
Travel	$44.4	$13.8						
Contractual	$7.1	$7.1						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$109.1	$26.9	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	$9.1	$1.4	FFY 2001	FFY 2002	FFY 2003	FFY 2004	FFY 2005	
Project Total	$118.2	$28.3	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	1.1	0.1						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory Group
Agency: Multiple

SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000
Personnel	$51.6	$0.0
Travel	$44.4	$13.8
Contractual	$7.1	$7.1
Commodities	$0.0	$0.0
Equipment	$0.0	$0.0
Subtotal	$103.1	$20.9
General Administration	$8.2	$0.5
Project Total	$111.3	$21.4
Full-time Equivalents (FTE)	1.0	0.0
Other Resources		

LONG RANGE FUNDING REQUIREMENTS

Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
TBD	TBD	TBD	TBD	TBD	

Dollar amounts are shown in thousands of dollars.

Comments:

Budget based on 4 meetings of the Public Advisory Group (two meetings in person and two by teleconference). No field trip scheduled for FY 00. PAG phone costs, printing and copying are partly a shared expense in the Operations component.

The Administrative Assistant has been moved to the Operations budget. This position will continue to provide support to the PAG, but the majority of her time will be devoted to archiving/inventory and information support.

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory ( )
Agency: AK Dept. of Fish and G...

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs: Name	Position Description	GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	Proposed FFY 2000
						0.0
	Subtotal		0.0	0.0	0.0	
					Personnel Total	$0.0

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FFY 2000
Member travel from various locations					
Regular meetings (1 one day meeting/1 two day meeting)					10.8
Other meetings/reviews (e.g., Restoration Workshop)					3.0
Note: In person meeting cost is approximately $4,900 per meeting for travel and per diem expenses. For a 2 day meeting, add $1,000 in per diem costs. Teleconference meetings cost approximately $600 per meeting.					
				Travel Total	$13.8

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory Group
Agency: AK Dept. of Fish and Game

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
Postage and courier	1.5
Teleconferencing (2 meetings)	1.2
Public Notice/Announcements for PAG meetings (approx $600 per meeting)	2.4
ADA Compliance	1.0
Other meeting costs	1.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$7.1

Commodities Costs:	Proposed
Description	FFY 2000
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory C p
Agency: AK Dept. of Fish and G

FORM 3B
Contractual & Commodities DETAIL

DRAFT

Printed: 7/20/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory Group
Agency: AK Dept. of Fish and Game

FORM 3B
Equipment
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000
Personnel	$6.0	$6.0
Travel	$0.0	$0.0
Contractual	$0.0	$0.0
Commodities	$0.0	$0.0
Equipment	$0.0	$0.0
Subtotal	$6.0	$6.0
General Administration	$0.9	$0.9
Project Total	$6.9	$6.9
Full-time Equivalents (FTE)	0.1	0.1
Other Resources		

LONG RANGE FUNDING REQUIREMENTS					
Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
TBD	TBD	TBD	TBD	TBD	

Dollar amounts are shown in thousands of dollars.

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory C p
Agency: Dept. of the Interior

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs: Name	Position Description	GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	Proposed FFY 2000
Mutter	Regional Environmental Assistant		1.0	6.0		6.0
	Subtotal		1.0	6.0	0.0	
					Personnel Total	$6.0

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FFY 2000
				Travel Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory Group
Agency: Dept. of the Interior

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FFY 2000
Description	
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed FFY 2000
Description	
Commodities Total	$0.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory Group
Agency: Dept. of the Interior

FORM 3B
Contractual & Commodities DETAIL

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	PROPOSED FFY 2000 TRUSTEE AGENCIES TOTALS					
			ADEC	ADF&G	ADNR	USFS	DOI	NOAA
			$44.8	$40.3	$41.5	$37.4	$35.1	$50.1
Personnel	$253.8	$172.4						
Travel	$49.0	$42.0						
Contractual	$0.0	$0.0						
Commodities	$9.0	$9.0						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$311.8	$223.4	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$38.2	$25.9						
Project Total	$350.0	$249.3	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	3.0	2.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

FFY 00 budget reflects 0.25 FTE (3 months) funding for each agency liaison.

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support

SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases:			
Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage:		
Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Public Advisory Group
Agency: Dept. of the Interior

FORM 3B
Equipment
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000
Personnel	$43.2	$32.4
Travel	$10.0	$6.0
Contractual	$0.0	$0.0
Commodities	$1.5	$1.5
Equipment	$0.0	$0.0
Subtotal	$54.7	$39.9
General Administration	$6.5	$4.9
Project Total	$61.2	$44.8
Full-time Equivalents (FTE)	0.5	0.3

LONG RANGE FUNDING REQUIREMENTS

Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
TBD	TBD	TBD	TBD	TBD	

Dollar amounts are shown in thousands of dollars.

Other Resources

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Environmental Conservation

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
See	Agency Liaison		4.0	8.1		32.4
	Subtotal		4.0	8.1	0.0	
					Personnel Total	$32.4

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
Trustee Travel					3.0
Liaison travel					3.0
				Travel Total	$6.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Environmer Conservation

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

Printed: 7/26/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed
Description	FFY 2000
Office supplies/other liaison costs	1.5
Commodities Total	$1.5

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Environmental Conservation

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Environme Conservation

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000						
Personnel	$40.2	$26.8						
Travel	$8.0	$8.0						
Contractual	$0.0	$0.0						
Commodities	$1.5	$1.5						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$49.7	$36.3	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$6.0	$4.0						
Project Total	$55.7	$40.3	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	0.5	0.3						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Fish and Game

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
Slater	Agency Liaison		4.0	6.7		26.8
	Subtotal		4.0	6.7	0.0	
					Personnel Total	$26.8

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
Trustee Travel					5.0
Liaison travel					3.0
				Travel Total	$8.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Fish and G

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed
Description	FFY 2000
Office supplies/other liaison costs	1.5
Commodities Total	$1.5

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Fish and Game

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Fish and G

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel	$44.4	$29.6						
Travel	$3.0	$6.0						
Contractual	$0.0	$0.0						
Commodities	$1.5	$1.5						
Equipment	$0.0	$0.0						
Subtotal	$48.9	$37.1	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$6.7	$4.4						
Project Total	$55.6	$41.5	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	0.5	0.3						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Natural Resources

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
Fries	Agency Liaison		4.0	7.4		29.6
	Subtotal		4.0	7.4	0.0	
					Personnel Total	$29.6

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
Liaison travel					3.0
Trustee Travel					3.0
				Travel Total	$6.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Natural Res ces

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FFY 2000
Description	
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed FFY 2000
Description	
Office supplies/other liaison costs	1.5
Commodities Total	$1.5

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Natural Resources

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: AK Dept. of Natural Res[illegible]ces

FORM 3B
Equipment
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
			Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
Personnel	$39.0	$26.0						
Travel	$8.0	$6.0						
Contractual	$0.0	$0.0						
Commodities	$1.5	$1.5						
Equipment	$0.0	$0.0						
Subtotal	$48.5	$33.5						
General Administration	$5.9	$3.9						
Project Total	$54.4	$37.4	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	0.5	0.3						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: Dept. of Agriculture, Forest Service

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs: Name	Position Description	GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	Proposed FFY 2000
Holbrook	Agency Liaison		4.0	6.5		26.0
	Subtotal		4.0	6.5	0.0	
					Personnel Total	$26.0

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Proposed FFY 2000
Trustee Travel					3.0
Liaison travel					3.0
				Travel Total	$6.0

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison
Agency: Dept. of Agriculture, Fo Service

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed
Description	FFY 2000
Office supplies/other liaison costs	1.5
Commodities Total	$1.5

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: Dept. of Agriculture, Forest Service

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: Dept. of Agriculture, Fo Service

FORM 3B
Equipment
DETAIL

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
Personnel	$36.6	$24.0						
Travel	$10.0	$6.0						
Contractual	$0.0	$0.0						
Commodities	$1.5	$1.5						
Equipment	$0.0	$0.0						
Subtotal	$48.1	$31.5	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
General Administration	$5.5	$3.6						
Project Total	$53.6	$35.1						
Full-time Equivalents (FTE)	0.5	0.3						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: Dept. of the Interior

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
TBD	Liaison		4.0	6.0		24.0
	Subtotal		4.0	6.0	0.0	
					Personnel Total	$24.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
Trustee travel					3.0
Liaison travel					3.0
				Travel Total	$6.0

?000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: Dept. of the Interior

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FFY 2000
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0

Commodities Costs:	Proposed
Description	FFY 2000
Office supplies/other liaison costs	1.5
Commodities Total	$1.5

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: Dept. of the Interior

FORM 3B
Contractual & Commodities
DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: Dept. of the Interior

FORM 3B
Equipment
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FFY 1999	Proposed FFY 2000	LONG RANGE FUNDING REQUIREMENTS					
			Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	Estimated FFY 2004	Estimated FFY 2005	
Personnel	$50.4	$33.6						
Travel	$10.0	$10.0						
Contractual	$0.0	$0.0						
Commodities	$1.5	$1.5						
Equipment	$0.0	$0.0						
Subtotal	$61.9	$45.1						
General Administration	$7.6	$5.0						
Project Total	$69.5	$50.1						
Full-time Equivalents (FTE)	0.5	0.3						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: National Oceanic & Atmospheric Administration

FORM 3A
TRUSTEE
AGENCY
SUMMARY

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 2000
Wright	Agency Liaison		4.0	8.4		33.6
	Subtotal		4.0	8.4	0.0	
					Personnel Total	$33.6

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 2000
Trustee Travel					5.0
Liaison travel					5.0
				Travel Total	$10.0

?000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: National Oceanic & Atı)heric Administration

FORM 3B
Personnel
& Travel
DETAIL

DRAFT

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FFY 2000
Description	
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.0
Commodities Costs:	Proposed FFY 2000
Description	
Office supplies/other liaison costs	1.5
Commodities Total	$1.5

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: National Oceanic & Atmospheric Administration

FORM 3B
Contractual & Commodities DETAIL

DRAFT

Printed: 7/30/99

DRAFT FFY 00 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FFY 2000
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

2000

Project Number: 00100
Project Title: Public Information, Science Management and Administration - Liaison Support
Agency: National Oceanic & Atmospheric Administration

FORM 3B
Equipment
DETAIL

DRAFT

Revision 8-3-99
approved TC 8-9-99

Habitat Protection and Acquisition Support

Project Number:	00126
Restoration Category:	Habitat Protection
Proposer:	AK Dept. Of Natural Resources
Lead Trustee Agency:	ADNR, USFS
Cooperating Agencies:	ADF&G, USFS, DOI
Duration:	FFY 2000 - TBD
Cost FY 00:	$ 373.5
Cost FY 01:	$ To be determined
Geographic Area:	Prince William Sound, Kenai Peninsula, Alaska Peninsula Kodiak Archipelago
Injured Resource/Service:	Multiple Resources

ABSTRACT

Project 00126 provides negotiation support to the Trustee Council in order to reach closure on habitat protection priorities. This support includes those services such as 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. The Trustee Council has completed acquisition packages with 11 large parcel landowners resulting in the protection of 635,425 acres of land. Negotiations are continuing with Koniag, Inc., for acquisition of fee title to the 55,402 acres that are now under a limited conservation easement slated to expire in 2001. In addition, the Trustee Council has reached closure on the acquisition of nearly 41 small parcels encompassing seven thousand acres. Negotiations and closing activities continue with multiple phases of several large parcel acquisitions and several small parcel landowners.

INTRODUCTION

This project is designed to support habitat protection activities of the Trustee Council and is a continuation of the Comprehensive Habitat Protection Process. These activities include resource evaluations, appraisals, title searches, hazardous materials surveys and other efforts necessary for the Trustee Council to achieve habitat protection objectives. In 1993, the Restoration Team, Habitat Protection Work Group, conducted a survey and assessment of selected large parcels of private land (>1000 acres) within the oil spill zone. The lands were mapped, scored and ranked to determine the restoration value of these areas to injured resources and services and the benefits that could be achieved through habitat protection.

Successful large parcel acquisitions have been completed with owners of lands within Kachemak Bay State Park and on northern Afognak Island resulting in the purchase of the park inholdings and in the establishment of the Afognak Island State Park; with Akhiok-Kaguyak and Old Harbor Native Corporation for the purchase of habitat protection rights on lands located within the Kodiak National Wildlife Refuge; with the Kodiak Island Borough for lands on Shuyak Island that have been included in Shuyak Island State Park; and with Chenega Corporation for habitat protections rights in western Prince William Sound. The English Bay Corporation has agreed to sell 32,537 acres of land within the Kenai Fjords National Park and the Alaska Maritime National Wildlife Refuge. The first closing occurred in November 1997 and resulted in the purchase of 29,636 acres. A second closing for the remaining acreage will complete this acquisition. Tatitlek Corporation has sold interests in 69,814 acres of land in Eastern Prince William Sound. The Eyak Corporation has sold a bundle of protection rights including fee simple as well as conservation easements that protect 75,000 acres of land in eastern Prince William Sound. Negotiations are continuing with Koniag for the purchase of fee title to lands currently protected by a term conservation easement.

COMPLETED LARGE PARCEL ACQUISITIONS

Acquisition	Acreage	Total Price	EVOS Trust Fund
Kachemak Bay State Park Inholdings	23,800	$22,000,000	$7,500,000
Seal Bay/Tonki Cape	41,549	$39,549,333	$39,549,333
Orca Narrows (timber rights)	2,052	$3,650,000	$3,650,000
Akhiok-Kaguyak Inc.	118,674	$46,000,000	$36,000,000
Old Harbor	31,609	$14,500,000	$11,250,000
Koniag (fee)	59,689	$26,500,000	$19,500,000
Koniag (limited term easement)	57,082	$2,000,000	$2,000,000
Shuyak Island-Kodiak Borough	26,665	$42,000,000	$42,000,000
Chenega	59,520	$34,000,000	$24,000,000
English Bay Corp.	29,636	$14,107,390	$12,913,644
Tatitlek Corp.	57,436	$24,150,000	$14,150,000
Afognak Joint Venture	41,750	$70,604,000	
Eyak Corporation	75,425	$45,000,000	

In 1995, Volume III of the Comprehensive Habitat Protection Process, *Small Parcel Process, Evaluation and Ranking* was completed. Responses to the solicitation for nominations of small parcels were processed and evaluated. The Trustee Council is currently moving forward with acquisition of a suite of small parcels that best meet the restoration goals and objectives identified by the Trustee Council. A current status report of these activities can be found in the Restoration Office's "Habitat Protection Program: Small Parcel Status Report."

Negotiations continue with Koniag as well as with numerous small parcel landowners. Reaching closure on these agreements requires substantial technical support. It is expected that Trustee Council efforts in this area will continue in the near term.

NEED FOR THE PROJECT

The objective of habitat protection is to identify and protect essential wildlife and fisheries habitats and associated services and to prevent further environmental damage to resources injured by the *Exxon Valdez* oil spill. Nineteen resources and services injured by the spill are linked to protection of upland and nearshore habitats. Protection of lands containing these habitats prevents additional injury to resources and services and natural support systems while recovery is taking place. Active negotiations and closing activities with landowners are currently taking place and anticipated to continue for at least one more year.

COMMUNITY INVOLVEMENT

The public has reviewed and commented favorably on all habitat protection efforts and has been highly supportive of habitat protection as a major restoration strategy into the future. All reports published as part of the Comprehensive Habitat Protection Process have been reviewed by the public. Input from natural resource and services specialists in the public sector was collected in a workshop conducted by The Nature Conservancy.

Members of local communities have previously had the opportunity to review habitat protection evaluation and ranking results and Trustee Council priorities. The Trustee Council continues to be receptive and responsive to pubic comment pertinent to habitat protection priorities and acquisitions. The Council's Public Advisory Group is briefed and the public is given the opportunity to comment prior to any Council action.

PROJECT DESIGN

A. Objectives

Habitat protection and acquisition is designed to protect lands linked to resources and services that were injured by the *Exxon Valdez* oil spill. Protection of these lands prevents additional injury to living resources and habitats, services and natural support systems while recovery is taking place. Habitat protection addresses cases where existing regulations affecting private land use may be inadequate to protect essential habitats of recovering resources and services. In situations where natural recovery is slow to occur or where direct restoration is neither technically feasible or cost effective, other measures need to be considered to mitigate injury. These may include replacement of injured resources and services with those that are equivalent. Replacement or acquisition of the equivalent means compensation for an injured, lost or destroyed resource by substituting another resource that provides the same or substantially similar services as the injured resource (56 Federal Register 8899 [March 1, 1991]).

The affected injured resources and associated services are listed below. Although habitat protection objectives and benefits for each of these resources and services differ depending on the particular parcel and the options acquired general objectives and benefits are outlined below.

- Pink salmon, sockeye salmon, cutthroat trout, Dolly varden, herring: ensure maintenance of adequate water quality, riparian habitat and intertidal habitat for spawning and rearing.

- Bald eagle: ensure maintenance of adequate nesting habitat and reduce disturbance in feeding and roosting areas.
- Black Oystercatcher: reduce disturbance to feeding and nesting sites.
- Common murre: reduce disturbance in nearshore feeding areas and near nesting colonies.
- Harbor seal and sea otters: reduce disturbance at haul-out sites, pupping sites, and in nearshore feeding areas.
- Harlequin duck: ensure maintenance of adequate riparian habitat for nesting and brood rearing, and reduce disturbance to nearshore feeding, molting, and broodrearing habitats.
- Intertidal/subtidal biota: maintain water quality along shoreline and reduce disturbance in nearshore areas.
- Marbled murrelet: ensure maintenance of adequate nesting habitat and reduce disturbance to nearshore feeding and broodrearing habitats.
- River otter: ensure maintenance of adequate riparian and shoreline habitats for feeding and denning.
- Recreation: Maintain or enhance public access for recreational opportunities, reduce disturbances that would create visual impacts.
- Wilderness: Maintain wilderness qualities, reduce impacts to wilderness qualities.
- Cultural resources: Maintain or reduce disturbance to cultural resource sites.
- Subsistence: Ensure subsistence opportunities in known harvest areas.

B. Methods:

The Habitat Protection and Acquisition Process is the method for acquiring lands or partial interests in lands that contain habitats linked to resources and/or services injured by the oil spill. Protection tools that will be considered for use by the Trustee Council include: fee acquisition, conservation easements, acquisition of partial interests, cooperative management agreements, and others. Following purchase, acquired parcels will be managed by the appropriate resource agency in a manner that is consistent with the restoration of the affected resources and/or services. The Trustee Council will decide which agency will manage the land or may create a new management authority.

Funds from this project will be used to acquire full title or partial interests in lands, subject to approval by the Trustee Council, that contain habitats/sites linked to resources and services that were injured by the *Exxon Valdez* oil spill. Acquisition of lands or interest in lands will be accomplished according to accepted realty principles and practices. All acquisitions will require title evidence, appraisals of fair market value, litigation reports, hazardous substances surveys, legal review of title, and negotiations. Some acquisitions may require land surveys and additional ecological surveys.

In FY 00, it is expected that negotiations and closing activities will continue with Afognak Joint Venture, Eyak Corporation, English Bay, and Akhiok Kaguyak, as well as with several small parcel landowners.

Subsequent closings with Afognak Joint Venture may require modifications and adjustments to parcel boundaries as a result of surveys currently underway. The survey will need to be reviewed by State reviewers in consultation with a timber expert. Title research will need to be updated and results reviewed, as well as a hazardous materials survey with follow-up site visits prior to the second and third closings. A second closing with the Eyak Corporation will involve parcel inspection, review of survey, and review of title documents by both contractors and agency personnel. Given the nature of these transactions and the conservation easements associated with them, title, surveys, appraisals, and closing documents will be reviewed by both state and federal agencies for all acquisitions.

While the first closing has occurred with English Bay, work remains to bring the second phase of this transactions to closure. The Old Harbor exchange will continue to be active.

The Akhiok Kaguyak acquisition is in its final phase and will require appraisal review, document preparation, and review. This acquisition has been more time consuming because of the presence of 14(c) sites within the area being acquired. In addition, the USFWS is pursuing 10 acre parcels in the Larsen Bay area as well as other small parcels.

The USFS is pursuing negotiations and following through with the acquisitions of numerous small parcels associated with the Tatitlek acquisition. The acquisitions will require appraisals, title work, HAZMAT inspections, and review of documentation by the federal and state reviewers.

Additional work on small parcels will focus primarily on those parcels currently identified as actively under consideration. Those requiring the most extensive work are likely to be Termination Pt., the Kenai Natives Association package, Tatitlek homesite lots, and the Kodiak Island Borough tax parcels as well as 42 additional 10 acre parcels along Uyak Bay. Several small parcels located on the Kenai Peninsula and in Valdez will require additional work to bring these to closure. Appraisals, appraisal reviews, title research and review, hazardous materials surveys and closing costs are all anticipated. Habitat biologists with the Alaska Department of Fish and Game continue to provide resource information.

C. Contracts and Other Agency Assistance

Various components of this project will be contracted out to the private sector. Contracting is managed by the agency responsible for acquisition of habitat protection rights and future management. Various agencies handle various realty requirements differently depending upon agency requirements and in house expertise.

SCHEDULE

This project is a continuation of 93064, 94126, 95126, 96126, 97126, 98126, and 99126, and does not lend itself to a specific timetable. Activities associated with this project are subject to influence from landowners, negotiators and various contractors.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

All habitat protection efforts including this project are dependent upon the results of on-going research and monitoring projects. For example, the Large Parcel Element used information from the anadromous fish stream catalog, colonial seabird catalog, bald eagle nesting maps, and data from Trustee Council funded studies on black oystercatchers, marbled murrelets and pigeon guillemots.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

There is no substantive change anticipated for FY 00. It is anticipated that the approach to habitat protection acquisitions pursued by the Trustee Council will remain essentially the same.

ENVIRONMENTAL COMPLIANCE

Previous acquisitions have received a categorical exclusion. The appropriate federal agencies, U.S. Department of the Interior or U.S. Forest Service will comply with NEPA where appropriate.

PERSONNEL

Project Leaders

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Revision 8-6-99
Approved 8-9-99

1998 EXXON VALDEZ TR[illegible]E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000	PROPOSED FY 2000 TRUSTEE AGENCIES TOTALS					
			ADEC	ADF&G	ADNR	USFS	DOI/USFWS	DOI/NPS
				$15.8	$163.0	$110.2	$77.4	$7.1
Personnel	$262.3	$159.1						
Travel	$39.3	$36.7						
Contractual	$392.5	$138.9						
Commodities	$7.2	$5.2						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$701.3	$339.9		Estimated FY 2000	Estimated FY 2001	Estimated FY 2002		
General Administration	$66.7	$33.6						
Project Total	$768.0	$373.5				$0.0		
Full-time Equivalents (FTE)	1.2	2.2						
	Dollar amounts are shown in thousands of dollars.							
Other Resources	$0.0	$0.0		$0.0	$0.0	$0.0		

Comments: This project is a continuation of Project 99126. Budget estimates are based upon the current status of negotiations as of June 15, 1999.

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Lead Agency: AK Dept. of Natural Resources, US Forest Service

FORM 2A
MULTI-TRUSTEE
AGENCY
SUMMARY

Prepared: 1 of 21

8/6/99

1998 EXXON VALDEZ TR :E COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000						
Personnel	$35.6	$28.4						
Travel	$2.8	$1.2						
Contractual	$254.7	$120.4						
Commodities	$0.5	$0.3						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$293.6	$150.3		Estimated FY 2000	Estimated FY 2001	Estimated FY 2002		
General Administration	$22.9	$12.7						
Project Total	$316.5	$163.0			$125.0			
Full-time Equivalents (FTE)		0.3						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:
Budget reflects continuation of AJV and EYAK large parcel transactions, Old Harbor Exchange, AKI Exchange, Lesnoi, Blondeau, and several other small parcels.

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Natural Resources

FORM 3A
TRUSTEE
AGENCY
SUMMARY

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
	Position Description	Step	Budgeted	Costs	Overtime	FY 1999
	Natural Resource Manager II	20	3.0	7.2		21.6
	Natural Resource Manager I	18	1.0	6.8		6.8
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		4.0	14.0	0.0	
					Personnel Total	$28.4

Travel Costs:	Ticket	Round	Total	Daily	Proposed
	Price	Trips	Days	Per Diem	FY 1999
					0.0
Travel to Prince William Sound and Gulf of Alaska for purposes of survey, title verification, and recordation, appraisal review and site inspections.	0.30	2	4	0.15	1.2
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$1.2

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Natural Resources

FORM 3B
Personnel
& Travel
DETAIL

Prepared:

8/6/99

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FY 1999
Map production and data analysis support for negotiators, appraisers, land status verification, data management support.	12.4
Services necessary for the Trustee Council to reach closure on purchase agreements for parcels under negotiation. This may include: title reports, litigation reports, appraisal reviews, timber reviews, survey review.	60.0
Travel and negotiation support expenses for Dept. of Law	4.0
Document production and printing costs	2.0
Small Parcel Title Insurance	10.0
Small Parcel Appraisals	5.0
Closing and recordation of final title documents, surveys, easements.	2.0
Hazardous Materials Review, AJV, Lesnoi, Small parcels.	2.0
Old Harbor Exchange	23.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$120.4

Commodities Costs:	Proposed
Description	FY 1999
Office supplies (toner cartridges, data cassettes, etc.)	0.3
Commodities Total	$0.3

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Natural Resources

FORM 3B
Contractual & Commodities DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRI E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Natural Resources

FORM 3B
Equipment
DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRL_ _ _E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000						
Personnel	$132.0	$68.9						
Travel	$19.0	$15.8						
Contractual	$68.0	$11.0						
Commodities	$5.0	$3.4						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$224.0	$99.1		Estimated FY 2000	Estimated FY 2001	Estimated FY 2002		
General Administration	$24.6	$11.1						
Project Total	$248.6	$110.2			$100.0			
Full-time Equivalents (FTE)		0.9						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:
Continuation of 99126 Small Parcels.

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Forest Service

FORM 3A
TRUSTEE
AGENCY
SUMMARY

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 1999
J. Smith	Appraiser	13	1.0	6.7		6.7
L. Keeler	Lands Specialist	12	1.0	6.2		6.2
K. Holbrook	Realty/Land Parcel Specialist	13	6.0	6.7		40.2
J. Swanson	Lands Examiner	9	1.9	4.8		9.1
D. Kennedy	Lands Specialist	13	1.0	6.7		6.7
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		10.9	31.1	0.0	
					Personnel Total	$68.9

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 1999
					0.0
RT Anchorage to Cordova	0.30	6	30	0.2	7.8
RT Anchorage to Juneau	0.50	3	15	0.2	4.5
RT Anchorage to Washington DC	2.50	1	5	0.2	3.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$15.8

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Forest Service

FORM 3B
Personnel
& Travel
DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRU[illegible]E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FY 1999
Description	
Title documents, title reports, purchase agreements	3.0
Air Charter, 20 hours @ $400/hr.	8.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$11.0

Commodities Costs:	Proposed FY 1999
Description	
supplies	2.0
Maps	1.0
Film and development	0.4
Commodities Total	$3.4

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Forest Service

FORM 3B
Contractual & Commodities DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Forest Service

FORM 3B
Equipment
DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRL_ _ _E COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000						
Personnel	$69.9	$45.7						
Travel	$16.3	$19.1						
Contractual	$69.5	$4.0						
Commodities	$1.5	$1.5						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$157.2	$70.3		Estimated FY 2000	Estimated FY 2001	Estimated FY 2002		
General Administration	$15.4	$7.1						
Project Total	$172.6	$77.4			$125.0			
Full-time Equivalents (FTE)	1.2	0.8						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

Budget represents acquisition costs including appraisal, appraisal review, document preparation, negotiation, and closing costs associated with AKI final phase, AJV phase III, Larsen Bay 10-acre parcels, and small parcels.

1999 accomplishments include Koniag 4th closing, KNA closing, several small parcel closings, larsen Bay 10-acre parcel closings from the Conservation Fund and Kodiak Island Borough (anticipated).

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Fish & Wildlife Service

FORM 3A
TRUSTEE
AGENCY
SUMMARY

1998 EXXON VALDEZ TRL E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 1999
C. Mullaney	Realty Specialist	12	3.0	6.1	0.0	18.3
vacant	Appraiser	12	2.0	6.5	0.0	13.0
S. Shuck	Realty Specialist	13	1.0	6.9	0.0	6.9
					0.0	0.0
vacant	Realty Assistant	5	3.0	2.5	0.0	7.5
					0.0	0.0
					0.0	0.0
					0.0	0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		9.0	22.0	0.0	
					Personnel Total	$45.7

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 1999
					0.0
Travel to Kodiak	0.4	8	24	0.17	7.3
Kodiak Charters					4.0
Travel for Colorado Staff	0.8	1	5	0.20	1.8
					0.0
Travel for Barry Roth					5.0
Travel for Buff Bohlen					1.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$19.1

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Fish & Wildlife Service

FORM 3B
Personnel
& Travel
DETAIL

Prepared:

8/6/99

1998 EXXON VALDEZ TRU_ _ _E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed
Description	FY 1999
Title Insurance and Related Fees	4.0
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$4.0

Commodities Costs:	Proposed
Description	FY 1999
Office Supplies	1.5
Commodities Total	$1.5

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Fish & Wildlife Service

FORM 3B
Contractual & Commodities DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: US Fish & Wildlife Service

FORM 3B
Equipment
DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRI E COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000
Personnel	$13.0	$13.0
Travel	$1.2	$0.6
Contractual	$0.3	$0.2
Commodities	$0.2	$0.0
Equipment	$0.0	$0.0
Subtotal	$14.7	$13.8
General Administration	$2.0	$2.0
Project Total	$16.7	$15.8
Full-time Equivalents (FTE)		0.2
Other Resources		

LONG RANGE FUNDING REQUIREMENTS

Estimated FY 2000	Estimated FY 2001	Estimated FY 2002
	$20.0	

Dollar amounts are shown in thousands of dollars.

Comments:

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Fish & Game

FORM 3A
TRUSTEE
AGENCY
SUMMARY

1998 EXXON VALDEZ TRU E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 1999
	Habitat Biologist III	18	2.0	6.5		13.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		2.0	6.5	0.0	
					Personnel Total	$13.0

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 1999
					0.0
Travel to Spill Area Communities	0.1	2	2	0.2	0.6
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.6

1999

Project Number: 99126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Fish & Game

FORM 3B
Personnel
& Travel
DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FY 1999
Description	
Document reproduction	0.2
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$0.2

Commodities Costs:	Proposed FY 1999
Description	
Office Supplies	
Commodities Total	$0.0

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Fish & Game

FORM 3B
Contractual & Commodities DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRU_ _E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

New Equipment Purchases:	Number	Unit	Proposed
Description	of Units	Price	FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage:	Number	Inventory
Description	of Units	Agency

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: AK Dept. of Fish & Game

FORM 3B
Equipment
DETAIL

Prepared:

8/6/99

1998 EXXON VALDEZ TRU..E COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Budget Category:	Authorized FY 1999	Proposed FY 2000						
Personnel	$11.8	$3.1						
Travel	$0.0	$0.0						
Contractual	$0.0	$3.3						
Commodities	$0.0	$0.0						
Equipment	$0.0	$0.0	LONG RANGE FUNDING REQUIREMENTS					
Subtotal	$11.8	$6.4		Estimated FY 2000	Estimated FY 2001	Estimated FY 2002		
General Administration	$1.8	$0.7						
Project Total	$13.6	$7.1			$10.0			
Full-time Equivalents (FTE)		0.0						
	Dollar amounts are shown in thousands of dollars.							
Other Resources								

Comments:

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: National Park Service

FORM 3A
TRUSTEE
AGENCY
SUMMARY

1998 EXXON VALDEZ TRU[illegible] COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 1999
TBD	Lands Specialist	13	0.5	6.2		3.1
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		0.5	6.2	0.0	
					Personnel Total	$3.1

Travel Costs:	Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FY 1999
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$0.0

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: National Park Service

FORM 3B
Personnel
& Travel
DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRU : COUNCIL PROJECT BUDGET
October 1, 1999 - September 30, 2000

Contractual Costs:	Proposed FY 1999
Description	
Closing costs, including title evidence and escrow fees for English Bay	3.3
When a non-trustee organization is used, the form 4A is required. **Contractual Total**	$3.3

Commodities Costs:	Proposed FY 1999
Description	
Commodities Total	$0.0

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: National Park Service

FORM 3B
Contractual & Commodities DETAIL

Prepared: 8/6/99

1998 EXXON VALDEZ TRU : COUNCIL PROJECT BUDGET

October 1, 1999 - September 30, 2000

New Equipment Purchases: Description	Number of Units	Unit Price	Proposed FY 1999
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.		**New Equipment Total**	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY 00

Project Number: 00126
Project Title: Habitat Protection & Acquisition Support
Agency: National Park Service

FORM 3B
Equipment
DETAIL

Prepared:

8/6/99