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# 19.04.01

# 1993 Work Plan

# Draft Project Descriptions

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Receival of updated 1993 Project Ideas

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93019 w/o Disk Village Mariculture Project

93020 w/o Disk Seward Shellfish Hatchery

93021 will not be submitted Restoration of Murres by Way of Transplantation of Chicks-Feasibility Study **(not available at print time)**

93022 and 049 w/Disk w/out Budget Restoration of Murres by Way of Behavioral Attraction and Habitat Enhancement

93023 will be delayed Restoration of Windy Bay Mussel Beds **(combined with 93038-lead & 93027)**

93024 w/o Disk Restoration of the Coghill Lake Sockeye Salmon Stock

93025 w/Disk Montague Island Chum Salmon Restoration

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93027 see 23 Chenega Bay Subsistence Restoration Project (Remove Oil) **(combined with 93038-lead & 93023)**

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93035 w/Disk Feeding Ecology and Reproductive Success of Black Oystercatcher in Prince William Sound

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93043 will be taken from FWS Monitoring of Sea Otter Population Abundance, Distribution, Reproduction, and Mortality **(combined with 93044)**

93044 Habitat Utilization by Sea Otters and Designation of Protected Areas **(combined with 93043)**

✓93045 w/disk Surveys to Monitor Marine Bird and Sea Otter Populations

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✓93047 w/disk Monitoring Injury to Rockfish in Prince William Sound **(not available at print time)**

93048 From Oiled Volume Communication System for Oil Spill Program

✓93049 see 022 Monitoring Rate of Recovery of Murres in Breeding Colonies Downstream From Oil Spill

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93052 From old Volume Identification and Protection of Important Bald Eagle Habitats

✓93053 w/disk Hydro Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated With the Exxon Valdez Oil Spill

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93056 contains w/47 Recovery Monitoring of Hydrocarbon-Contaminated Subtidal Marine Sediment Resources

✓ 93057 A/B w/ disk Damage Assessment GIS

✓ 93058 w/o DISK w/out budget Habitat Protection and Acquisition Option (Overview)

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93019 Chugach Region Village Mariculture Project

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93021 Restoration of Murres by Way of Transplantation of Chicks-Feasibility Study **(not available at print time)**

93022 Evaluation to Feasibility of Enhancing Productivity of Murres by Using Decoys, Dummy Eggs, and Recordings of Murre Calls to Simulate Normal Densities at Breeding Colonies Affected by the EVOS, and Monitoring the Recovery of Murres in the Barren Islands **(combined with 93049)**

93023 **(combined with 93038 & 93027)**

93024 Restoration of the Coghill Lake Sockeye Salmon Stock

93025 Montague Island Chum Salmon Restoration

93026 Fort Richardson Hatchery Water Pipeline

93027 **(combined with 93038 & 93023)**

93028 Restoration and Mitigation of Essential Wetland Habitats for Injured Prince William Sound Fish and Wildlife Species

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93037 Experimental Evaluation of Oiled/Control Paired Design Used in Assessing Damage and Recovery of Inter and Subtidal Communities **(combined with 93055)**

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93039 Herring Bay Experimental and Monitoring Studies

93040 Longterm Ecological Recovery Monitoring Program **(combined with 93054)**

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93043 Sea Otter Population, Demographics and Habitat Use in Areas Affected by the EVOS **(combined with 93044)**

93044 **(combined with 93043)**

93045 Surveys to Monitor Marine Bird and Sea Otter Populations in Prince William Sound During Summer and Winter

93046 Habitat Use and Behavior of Harbor Seals in Prince William Sound

93047 Recovery of Sediments, Hydrocarbon - Degrading Subtidal Monitoring Microorganisms, eelgrass communities, and Fish in the Shallow Subtidal Environment **(combined with 93056)**

93048 Communication System for Oil Spill Program

93049 **(combined with 93022)**

93050 Update Restoration Feasibility Study #5

(Identification and Recordation of Information Services Revellent to Land and Resources Affected by the EVOS)

93051 Information Needs for Habitat Protection /Acquisition Process

93052 Identification and Protection of Important Bald Eagle Habitats

93053 Hydrocarbon Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated With the Exxon Valdez Oil Spill

93054 **(combined with 93040)**

93055 **(combined with 93037)**

93056 **(combined with 93047)**

93057A Damage Assessment GIS

B Restoration GIS

93058 Habitat Protection and Acquisition Option

93059 Imminent Threat Habitat Protection

93060 Accelerated Data Acquisition

93061 New Data Acquisition

PROJECT DESCRIPTIONS

# EXXON VALDEZ OIL SPILL TRUSTEES

## I. TRANSMITTAL

## II. BASIC INFORMATION

Project Number 93001

Project Source

Project Title Recreation Resources Damage Assessment

Project Category Damage Assessment

Project Type Recreation Resources

Lead Agency USDA-Forest Service, Chugach National Forest

Cooperating Agencies Probable Cooperating Agencies will include Pacific Northwest Experiment Station (USFS) through the Copper River Delta Institute and the National Park Service through the Kenai Fiords National Park Involvement willalso be solicited from the State of Alaska and the U S Fish and WildlifeService

## III. INTRODUCTION

### A. Background on the Resource/Service

The recreation resources in Prince William Soundand the Gulf of Alaska to the west and the Copper River Delta are inextricably linked to a wide variety physical, biological, and cultural resources These "tangible" resources coupled with the users of the Sound and the providers of services and facilities constitute recreation opportunities

### B. Summary of Injury

There is anecdotal evidence which indicates that significant changes occurred in the utilization of the recreational resources in Prince William Sound following the oil spill These changes appear to involve reductions in use, relocation of use, and possibly increases in use in areas without the carrying capacity to sustain it Most often, use patterns changed as a result of the perception by consumers regarding contamination Social perceptions are the basis for most recreational use decisions

### C. Location

The damage assessment will focus on the Recreation resources of the Sound and the Gulf but will be conducted at least to some degree, on a national basis because the ultimate clientele for recreation and resource use in Prince William Sound includes consumers from throughout the United States

## IV. WHAT

### A. Goal

The primary goal of this project is to assess damage to recreation resources, including recreation service providers, in Prince William Sound, the west and Gulf of Alaska through Kodiak and Shelikoff Strait resulting from the Valdez oil spill

The secondary goal of this project is to establish a baseline data set for developing restoration measures for recreation

Another secondary goal is to provide baseline data to evaluate the consequences to recreation of restoration measure implemented for other resources

### B. Objectives

The objectives of this project will be to (1) Identify changes in the recreation settings in the study area resulting from the oil spill (2) Identify the changes in user perceptions of the recreation opportunities in the study area resulting from the oil spill (3) Identify changes in use levels and patterns in the study are resulting from the oil spill (4) Identify the change in type and demand for recreation by the residents of Prince William sound resulting from stress associated with the oil spill (5) Identify supply of recreation opportunities that can be substituted

## V. WHY

### A. Benefit to Injured Resources/Services

Establish estimates from quantitative and qualitative data regarding the extent and type of damages which resulted from the Valdez oil spill and compile data for developing appropriate and effective restoration activities

### B. Relationship to Restoration Goals

This project will provide data and information which will directly facilitate the development of a comprehensive restoration plan

## VI. HOW

### A. Methodology

The methodological approach of this project will include a number of procedures for collecting information and data which will be used to derive damage estimates and determine effective restoration activities Both primary and secondary data collection activities will be necessary From secondary data sources, information on pre-spill recreation setting, changes in visitation rates, available recreation services, and expenditure patterns willbe collected These data willprovide a description of pre-spill recreational use patterns

This information will also provide the context for the collection of primary data from several consumer populations Stratified random samples of recreational anglers and recreational hunters in the spill area for the years 1988, 1989 and 1990 willprovide data relevant to consumers' use rates and perceptions of damage to recreation settings A national survey willexpand the scope of this damage assessment by providing data on perceptions of potential consumers and the rourism industry regarding the extent and consequences of environmental damage to recreation setting in Prince William Sound

Finally, we will identify recreation places and services in the sound which might substitute for damaged places and services and we will identify education and service needs to provide accurate information to users about the current conditions of the Sound

### B. Coordination with Other Efforts

The work on this project willbe coordinated with and to some degree based on the field work and surveys developed by Dr J Steve Picou, who over the last four years has studied local communities impacted by the spill, and the CUSTOMER survey work done in 1992 which began the process of identifying activities, places and user attitudes We hope to utilize Dr Picou, Dr Pat Reed from CUSTOMER and personnel from each of the agencies involved Some of the survey work willbe contracted and other portions will be accomplished by the Copper River Delta Institute

## VII. ENVIRONMENTAL COMPLIANCE

As a non-ground disturbing activity, this action does not fall under the NEPA requirements OMB clearance may be required for some of the survey instruments

## VIII. WHEN

The research into existing information willbe completed in 1993 as willsurvey design and the first round of survey information collection We anticipate the need for follow up survey work in 1994 to clarify issues raised by the 1993 survey work, After 1994, small scale survey work willneed to be done to monitor changes and progress on restoration work

Project Description RECREATION DAMAGE ASSESSMENT

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1 Mar 93 30 Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $46 0 | 107 6 | $153 6 | $150 6 | $69 6 | $69 6 | $69 6 | $69 6 |
| Travel | $4 0 | 11 | $15 0 | $15 0 | $7 0 | $7 0 | $7 0 | $7 0 |
| Contractual | $114 0 | 266 | $380 0 | $240 0 | $120 0 | $120 0 | $120 0 | $120 0 |
| Commodities | $2 0 | 5 | $7 0 | $7 0 | $2 0 | $2 0 | $2 0 | $2 0 |
| Equipment | $1 5 | 3 | $4 5 | $2 5 | $1 0 | $1 0 | $1 0 | $1 0 |
| Capital Outlay | $0 0 | 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $167 5 | $392 6 | $560 1 | $415 1 | $199 6 | $199 6 | $199 6 | $199 6 |
| General Administration | $14 8 | 34 7 | $49 5 | $39 4 | $18 8 | $18 8 | $18 8 | $18 8 |
| Project Total | $182 3 | $427 3 | $609 6 | $454 5 | $218 4 | $218 4 | $218 4 | $218 4 |
| Full-time Equivalents (FTE) | 3 3 | 3 3 | 3 3 | 3 3 | 1 5 | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| CHIEF INVESTIGATOR | 9 | $48 7 | |
| RESEARCH ASSISTANT | 6 | $23 4 | SEASONAL SURVEYORS INCLUDES 4 POSITIONS |
| CONTRACTING SPECIALIST | 2 | $11 2 | PROJECT MANAGER 5 MONTHS, $3,000 |
| PURCHASING AGENT | 1 | $3 6 | IF PROJECT TERMINATED AFTER FY93 CLOSOUT |
| SEASONAL SURVEYORS | 16 | $50 7 | WILL COST APPROXIMATELY $42,000 |
| CLERICAL | 6 | $13 0 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

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**1993**

page of

Project Number 93-001
Project Title REC DAMAGE ASSESSMENT
Agency USDA FOREST SERVICE

FORM 2A
PROJECT
DETAIL

| | | |
|---|---|---|
| **Travel** | 10% of wages | $15 0 |
| sub-tot | | $15 0 |
| **Contractual** | National Survey | $110 0 |
| | Local Communities Survey--Copper River Institute, Picou | $50 0 |
| | Rec Services Providers--Copper River Institute | $50 0 |
| | State of Alaska Marine Parks Survey Coordination--Alaska DNR | $30 0 |
| | Kenai Fiords Survey--National Park Service | $60 0 |
| | Afognak to Aleutians Survey--U S Fish and Wildlife Service | $60 0 |
| | Vehicle rentals | $13 0 |
| | Document printing | $7 0 |
| sub-tot | | $380 0 |
| **Commodities** | Survey form prep | $4 0 |
| | photographic supplies | $2 0 |
| | Misc Supplies | $1 0 |
| sub-tot | | $7 0 |
| **Equipment** | PC acquisition | $4 5 |
| sub-tot | | $4 5 |
| SUB GA | | $49 6 |
| SUBPER | | $153 6 |
| TOTAL | | $609 7 |

17 Jul 92

**1993**

page of

Project Number 93-001
Project Title REC DAMAGE ASSESSMENT
Sub-Project ALL
Agency USFS, DNR, NPS

FORM 2B
PROJECT
DETAIL

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-002

**Project Source**

**Project Title** Sockeye Overescapement

**Project Category** Damage Assessment

**Project Type** Fish/Shellfish

**Lead Agency** Alaska Department of Fish and Game

**Cooperating Agencies** U S Fish and Wildlife Service

**Project Term. Start Date.** Ongoing (Oct 1, 1992) **Finish Date.** Continuing (Sept 30,1993)

## INTRODUCTION

### A Background on the Resource/Service

The sockeye salmon resource of Kodiak Island lakes affected by overescapement comprise approximately 20% of the Kodiak Island long-term commercial sockeye salmon harvest The Kenai River sockeye salmon lakes affected by the EXXON VALDEZ oil spill (EVOS) are the major income producer for commercial fishermen in Cook Inlet (CI) Sockeye salmon spawn in lakes associated with river systems Adult salmon serve an extremely important role in the ecosystem, providing food for marine mammals, terrestrial mammals, and birds Additionally, carcass decomposition serves to charge freshwater lake systems with important nutrients Juvenile salmon, which rear in lakes for one or two years, serve as a food source for a variety of fish and mammals Sockeye salmon are also an important subsistence, sport, and commercial species The ex-vessel value of the commercial catch of sockeye from these lake systems has averaged about $42 million per year since 1979, with the 1988 catch worth $115 million Sockeye salmon returns to the Kenai River system support some of the largest recreational fisheries in the State

### B Summary of Injury

Commercial fishing for sockeye salmon in 1989, was curtailed in upper CI, the outer Chignik districts, and the Kodiak areas due to presence of oil in the fishing areas from the EVOS As a result, the number of sockeye salmon entering four important sockeye-producing systems (Kenai/Skilak, Chignik/Black, Red, and Frazer Lakes) and two less important lake systems (Akalura and Afognak or Litnik lakes) greatly exceeded levels that are thought to be most productive

Overly large spawning escapements may result in poor returns by producing more rearing juvenile sockeye than can be supported by the nursery lake's productivity (Kyle et al 1988) In general, when rearing fish abundance greatly exceeds the lake's carrying capacity, prey (zooplankton) are altered by changes in species and size composition (Mills and Schiavone 1982, Koenings and Burkett 1987, Kyle et al 1988) and concomitant effects on all trophic levels can occur (Carpenter et al 1985) Because of such changes, juvenile sockeye growth is reduced, mortality increases, larger percentages holdover or another year of rearing, and the poor quality of smolts increases marine mortality Where escapements are two to three times normal levels, the resulting high juvenile densities crop the prey

resources to the extent that more than one year is required to return to normal productivity Rearing enriles from subsequent brood years suffer from both the poor quality of forage and from the increased competition for food by holdover juveniles (Townsend 1989, Koenings and Kyle 1991) This is the brood year interaction underlying cyclic variation in the year class strength of anadromous fish Smolt production from the Kenai River in 1991 was extremely low as was production of smolt from Red Lake In the spring of 1992, the Kenai River smolt estimates dropped by another order of magnitude, suggesting catastrophic declines in sockeye salmon returns in future years Counts of smolt migration in Red River (on Kodiak Island) were relatively higher in 1992, but still insufficient to provide an average return for this system The effects of overescapement can cause continued adversity because of multiple-year impacts on the zooplankton community or other critical juvenile life-history habitat components Consequently, damage assessment studies require continuation until the juvenile sockeye salmon habitat is restored or naturally recovers

**C Location**

The studies will be conducted on the Kenai Peninsula include the Tustumena and Kenai River lake systems In addition, studies will continue on Kodiak Island to assess the damage to the Red Lake system with Upper Station Lake acting as a control

**WHAT**

The goal of these studies is to determine the impacts of the overescapement of 1989 that was associated with fishery closures due to the EVOS The studies have specifically focused on Red Lake and the major rearing lakes of the Kenai River system Study activities include the enumeration of smolt production and sampling of smolt population characteristics, and monitoring of subsequent adult returns from these systems as well as measuring the changes in the rearing habitat of the effected lakes and nearby unaffected lake systems A secondary benefit of these studies may be to provide insight as to what, if anything, can facilitate rapid recovery of these systems

The specific objectives of these studies are

A Estimate the number, age, and size of sockeye salmon juveniles rearing in selected freshwater systems

B Estimate the number, age, and size of sockeye salmon smolts migrating from selected freshwater systems

C Determine effects of large escapements resulting from fishery closures caused by the EVOS on the rearing capacity of selected nursery lakes through

- a analysis of age and growth of juveniles and smolts
- b examination of nutrient budgets and plankton populations

D In addition, evaluation of diel vertical migration induced by sockeye salmon predation on subsequent growth and survival of juvenile sockeye will be made Also, assessment of the role of egg-bearing copepods as an essential diet component of sockeye salmon juveniles in glacial lakes will be conducted

***WHY***

Before any mitigation and restoration of sockeye salmon in the effected lakes can be undertaken, the extent and cause of damage needs to be established The resource in question has major implications for the commercial fishing industry on Kodiak Island and in Cook Inlet, where sockeye salmon provide

the major source of income In addition, heavy use of the Kenai River by subsistence, personal use, d sport fishermen have much importance to the Alaskan economy

To restore lost resources it is essential that a clear understanding of damages be assessed In the case of overescapement, a lake may require many years to recover, as the extent of damage may persist Thus, to prevent reoccurrence and compounding damage, and to expedite natural restoration of the system, an understanding of the mechanism is essential

**HOW**

From early May to early July, two inclined plane traps will be operated daily in the outlet stream of Red Lake about one mile below the lake's outlet The catch will be counted by species, and sockeye smolts will be sampled daily for age, length, weight, and condition factor Each week 500 sockeye smolts will be marked (biologically inert dye), and released about 0 5 mile above the traps to determine trap efficiency A similar operation will occur at Upper Station Lake which is the study control This project will also provide support for the assessment conducted by FRED Division (fall fry townetting) of pre-smolt sockeye rearing conditions (biomass and growth data) in Red and Upper Station Lakes

On the Kenai River, expanded smolt enumeration is proposed for the lower river through increased marking and recovery effort In addition, coded wire tagging of smolts is proposed on the Moose River and a smolt project is planned for the Russian River system

Limnology studies will continue on Upper Station and Red lakes on Kodiak, the major lakes of the Kenai River (Skilak and Kenai lakes), and on Tustumena Lake which is the control for the Kenai system In ddition, an optical plankton counter will be used to assist in determining the effects of predator .duced diel vertical migration in Skilak Lake These studies will be coupled with expanded tow netting on Skilak and Kenai Lake to obtain juvenile sockeye salmon specimens throughout their rearing cycle in freshwater Water quality and physical measurements from all of the lakes will continue to be monitored Disease screening of fish specimens is also planned

**ENVIRONMENTAL COMPLIANCE** None of the proposed projects are intrusive They involve collection of data and do not affect fish and wildlife populations or their habitat

**WHEN**

The studies are continuous and will most likely continue beyond the end of the upcoming fiscal year (September 30, 1993) The studies will terminate when the sockeye salmon populations or their habitat recover to pre-spill conditions Progress reports and interim findings will be released annually in a progress report issued in late November Major discoveries are issued through news releases or through scientific publication

Project Description This study is a continuation of the effects of sockeye salmon overescapement on river and lake ecosystems on Kodiak Island and the Kenai Peninsula Recent smolt numbers from the Kenai River and from Red River on Kodiak Island suggest major decreases in future sockeye salmon returns to both areas These studies will monitor future smolt outmigrations and fry densities rearing in the nursery lakes In addition, detailed investigation as to what factors, both biotic and abiotic, may have contibuted to the decline in production Budget reflects major work changes based on spring 1992 preliminary findings

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $118 9 | $440 1 | $559 0 | $400 0 | $375 0 | $200 0 | $100 0 | $100 0 |
| Travel | $4 0 | $7 8 | $11 8 | $10 0 | $10 0 | $10 0 | $5 0 | $5 0 |
| Contractual | $49 4 | $115 9 | $165 3 | $100 0 | $75 0 | $50 0 | $20 0 | $20 0 |
| Commodities | $16 1 | $51 2 | $67 3 | $50 0 | $40 0 | $30 0 | $15 0 | $15 0 |
| Equipment | $36 1 | $25 5 | $61 6 | $35 0 | $30 0 | $25 0 | $10 0 | $10 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $224 5 | $640 5 | $865 0 | $595 0 | $530 0 | $315 0 | $150 0 | $150 0 |
| General Administration | $19 8 | $74 1 | $93 9 | $67 0 | $61 6 | $33 5 | $16 4 | $16 4 |
| Project Total | $244 3 | $714 6 | $958 9 | $662 0 | $591 6 | $348 5 | $166 4 | $166 4 |
| Full-time Equivalents (FTE) | | 9 4 | | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| 7 Kodiak Comfish positions | 19 7 | $86 0 |
| 15 Kenai-Russian River positions | 46 5 | $145 6 |
| 10 FRED positions | 40 5 | $172 9 |
| 1 A P IV | 1 2 | $6 7 |
| 1 A/P II | 0 75 | $3 1 |
| 1 PS II | 0 75 | $3 3 |
| 1 Program Manager | 3 | $22 5 |
| Total | 112 4 | $440 1 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** If not funded in FY94, $97 0K will be needed for analysis of samoples collected in Fall 93 and final report preparation

17 Jul 92

1993



Project Number 93-002
Project Title Sockeye Salmon Overescapement
Agency ADF&G

FORM 2A
PROJECT
DETAIL

| | |
|---|---|
| **Travel** | Includes in-state trips for meetings, project supervision, and conventions Per diem is included |
| **Contractual** | Includes aircraft charter, outboard motor and radio repair, freight, chemical analyses, software licensing sampling equipment fabrication and calibration |
| **Commodities** | Scientific, office and photo supplies, special foul weather gear, outboard fuel and oil, repair, maintenance, groceries, safety supplies |
| **Equipment** | Boat and motors, fry tow nets, smolt trap |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-003

**Project Source**

**Project Title** Pink Salmon Egg to Pre-emergent Fry Survival in Prince William Sound

**Project Category** Damage Assessment/Restoration Monitoring

**Project Type** Fish and Shellfish

**Lead Agency** Alaska Department of Fish and Game

**Cooperating Agencies** National Marine Fisheries Service (NOAA)

**Project Term** **Start Date** 01/03/92 (day/month/year) **Finish Date** 30/07/95 (day/month/year)

**INTRODUCTION** Each year approximately one half billion wild pink salmon fry emerge from the streams of Prince William Sound (PWS) and migrate seaward Adult returns of wild pink salmon to PWS average from 10-15 million fish annually These huge outmigrations of wild pink salmon and subsequent adult returns play a major role in the PWS ecosystem Both juveniles and adults are important sources of food for many fish, birds, and mammals Adults returning from the high seas also convey needed nutrients and minerals from the marine ecosystem to estuaries, freshwater streams, and terrestrial ecosystems Wild pink salmon also play a major role in the economy of PWS because of their contribution to commercial, sport, and subsistence fisheries in the area

Up to 75% of pink salmon spawning in PWS occurs in intertidal areas In the spring of 1989 oil from the *T/V Exxon Valdez* oil spill (EVOS) was deposited in layers of varying thickness in intertidal portions of many western PWS streams utilized by spawning salmon Pink salmon eggs and fry rearing in these intertidal areas appear to have been adversely affected by the oil Salmon egg mortalities were 70%, 65%, and 115% higher in oiled streams than in comparable and nearby unoiled streams in 1989, 1990, and 1991 Differences between oiled and unoiled streams in 1989 and 1990 were confined to intertidal spawning areas and may be attributed to direct lethal effects of oil Large differences observed across all tide zones in 1991 may be the consequence of damage to germ cells of the adults which originated from the 1989 brood year when egg and larval exposures to intertidal oil were greatest A consequence of this genetic damage may be persistent functional sterility and reduced returns per spawner for populations from oiled streams

The proposed damage assessment and resource monitoring study will consist of field and laboratory studies conducted in western PWS and additional laboratory studies at the National Marine Fisheries Service (NMFS) Research facility at Little Port Walter in southeastern Alaska The majority of project funds will be spent to support the portion of the project located in PWS and will contribute to the local economy of Cordova Results of the project will direct future restoration efforts for pink salmon and may impact future harvest management strategies in PWS fisheries

**WHAT** The project will continue to monitor egg mortalities in the oiled and unoiled wild pink salmon streams previously studied, examine stream characteristics unrelated to oiling which may partially or completely explain observed mortality differences, and provide laboratory verification that field results observed for eggs in 1989, 1990 are consistent with lethal effects of oil contamination of intertidal pink salmon spawning habitat The laboratory verification experiment will also test the hypothesis that oil contamination during
incubation can result in functional sterilization of exposed animals at sexual maturity and may explain the persistence of higher egg mortalities observed in all tide zones of oiled streams in 1991

The specific objectives of the project are as follows

1 Estimate the density, by tide zone, of eggs and pre-emergent fry in 31 streams using numbers of live and dead eggs and fry
2 Estimate egg mortality and overwinter survival of pink salmon eggs in the oiled and unoiled streams among the 31 sampled
3 Determine whether the increased pink salmon egg mortalities observed in oiled streams in 1989, 1990, and 1991 can be attributed to the physical characteristics of the study streams
Determine survival, genetic damage, hydrocarbon uptake, mixed function oxidase activity, and sublethal teratogenic effects from long term exposures to oil in each of two exposure groups 1) green eggs to eyeing and 2) green eggs to swim-up
5 Determine survival, genetic damage, hydrocarbon uptake, and mixed function oxidase activity from long term exposures of juvenile pink salmon fed oil-contaminated food
6 Determine growth characteristics from each exposure group from juvenile stage to maturity
7 Assess whether differences exist among exposure groups with respect to fecundity, fertilization rate, genetic damage, and sub-lethal teratogenic effects in the second generation progeny through swim-up
8 Compare lab study with field observations
    1 Determine if the elevated egg mortalities in 1989 and 1990 were potentially caused by oiling in the environment
    2 Determine if the elevated egg mortalities in oiled streams in 1991 were potentially caused by genetic damage to 1989 eggs

**WHY** Information from this study will provide resource managers insight to the magnitude and persistence of damages sustained by wild pink salmon due to EVOS Efforts to restore damaged pink salmon populations depend upon the ability to identify sources of reduced survival and to monitor their persistence Information on the potential of oil exposures causing genetic damage is needed so spawning escapement goals can be reevaluated and adjusted if necessary Verification of the genetic hypothesis would also provide the first evidence that reproductive capacity of fish exposed to chronic or acute sources of oil pollution would be compromised

**HOW** *Field Studies* A systematic sampling program stratified by stream and tide zone will be used to lect egg and fry density and survival data from 11 oiled and 14 unoiled sites sampled previously in 'DA Fish/Shellfish Study 2, *Injury to Salmon Eggs and Fry in PWS* Sampling will consist of egg-digs conducted in late September and early October, and fry-digs conducted in mid-March Egg and pre-emergent fry data will be summarized by date, stream, level of hydrocarbon impact, stream zone, and number of live and dead eggs and fry Density estimates will be used to assess adult spawning success

Relative numbers of live and dead eggs and fry will be used to test for continued reductions in survival in oiled streams

*Laboratory Study 1* Intra-stream crosses will be made using within stream pools of randomly combined gametes from six oiled and six unoiled streams from southwestern PWS Eggs from the crosses will be incubated through hatching in a controlled laboratory environment Egg mortalities will be compared for all crosses Crossing results will be compared to results from field studies to determine the effect of stream characteristics on egg mortality differences previously observed between oiled and unoiled sites

*Laboratory Study 2* This study consists of three experiments The first will examine the effects of six levels of intertidal gravel oil contamination and two durations of exposure on responses to various life history stages of cultured eggs and fry Responses measured in the first generation will include survival ) eyeing, survival to emergence, hydrocarbon uptake, survival to maturity, growth to maturity, and ecundity Responses measured in the second generation will include fertilization rate and number of defective progeny Samples for use in genetic analyses will be collected from first generation eyed eggs, emergent fry, juveniles, and mature adults Genetic analyses will include flow cytometry methods and examination of metaphase germ cells Second generation eyed eggs and emergent fry will be similarly sampled The second experiment will determine if cultured fish fed oiled food for 6 weeks experience genetic damage and reduced gamete viability Treatments will consist of 6 concentrations of oil in the feed (1 control and 5 different oil levels) Biological responses to be measured between emergence and the first 6 weeks of feeding will include growth, survival, hydrocarbon concentration, chromosome damage, and MFO incidence Subsequent response measurements will include growth to maturity, fecundity, fertilization rate and number of defective progeny Flow cytometry samples and samples for examination of metaphase cells will be taken after the first 6 weeks and will mirror those taken in the first experiment The third experiment will determine if there is evidence of differential gamete survival to emergence between ten randomly paired families of cultured fish for five different treatment regimes The treatments will be a combination of oiling concentrations from study 1 (Ci) and duration of exposure as follows 1) control, 2) $C_2$ through eyeing, 3) $C_2$ through emergence, 4) $C_4$ through eyeing, and 5) $C_4$ through emergence The fertilized gametes from ten randomly selected pairs of pink salmon (family) will be divided into aliquots, each aliquot will be randomly assigned one of the five treatments (3 aliquots per treatment) Ten family groups will be created and assigned in this manner Individual aliquots will be incubated in pipe incubators and all fish culture practices will be randomized between families Families will be incubated until emergence when they will be inspected, counted, and terminated

**ENVIRONMENTAL COMPLIANCE** Egg and pre-emergent fry sampling will require an ADF&G Title

16 permit and an ADF&G biological collections permit Transport of wild gametes to the PWSAC chery will require an ADF&G Fish Transport Permit for each stock and a Permit Alteration may be juired to rear and incubate the wild eggs at the AFK Hatchery

**WHEN** August 1993 - Interim Report 1 including in-stream egg density and survival results, intra-stream crossing results, first generation doses response results for eggs and fry

August 1994 - Interim Report 2 including update of Interim Report 1,First generation doses response results through year 1

Final Report - July 1995

Project Description This project continues to monitor pink salmon egg to pre-energent fry survival in oiled and unoiled streams, it examines the effects of stream characteristics unrelated to oiling which may partially or completely explain mortality differences observed, and it provides laboratory verification that field results observed for eggs in 1989, 1990, 1991 are consistent lethal and persistent genetic effect of oil deposited in intertidal pink salmon spawning habitat

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $134 0 | $310 6 | $444 6 | $420 7 | $325 8 | $147 9 | $0 0 | $0 0 |
| Travel | $27 0 | $21 4 | $48 4 | $10 0 | $12 0 | $3 8 | $0 0 | $0 0 |
| Contractual | $6 5 | $199 0 | $205 5 | $80 1 | $60 1 | $38 1 | $0 0 | $0 0 |
| Commodities | $0 0 | $75 5 | $75 5 | $48 0 | $19 5 | $10 0 | $0 0 | $0 0 |
| Equipment | $81 0 | $19 0 | $100 0 | $0 0 | $0 4 | $0 0 | $0 0 | $0 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $248 5 | $625 5 | $874 0 | $558 8 | $417 8 | $199 8 | $0 0 | $0 0 |
| General Administration | $15 9 | $60 5 | $76 4 | $68 7 | $53 0 | $24 9 | $0 0 | $0 0 |
| Project Total | $264 4 | $686 0 | $950 4 | $627 5 | $470 8 | $224 7 | $0 0 | $0 0 |
| Full-Time Equivalents (FTE) | 5 0 | 4 7 | 9 7 | 10 1 | 7 4 | 2 7 | 0 0 | 0 0 |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Please see detailed sub-projects | | | * FY 93 is a transition year from the previously used oil year to the federal fiscal year This project also includes approved funding for January and February, 1993<br><br>** If not funded in FY 94, $115 5K is needed for data analyses and report preparation |

7 Jul 92

1993

page of

Project Number 93-003
Project Title Salmon Egg to Pre-emergent Fry Survival
Agency ADF&G and NMFS

FORM 2A
PROJECT
DETAIL

Project Description The NMFS portion of the egg mortality project provides laboratory verification that field results observed for eggs in 1989, 1990, 1991 are consistent with immediate lethal effects as well as persistent genetic damage caused by oil deposited in intertidal salmon spawning habitat

| Budget Category | Approved 1-Oct-92 28-Feb-92 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $29 2 | $117 9 | $147 1 | $165 9 | $105 4 | $0 0 | $0 0 | $0 0 |
| Travel | $8 0 | $10 0 | $18 0 | $6 0 | $8 0 | $0 0 | $0 0 | $0 0 |
| Contractual | $3 0 | $116 0 | $119 0 | $36 0 | $6 0 | $0 0 | | |
| Commodities | $0 0 | $54 0 | $54 0 | $25 5 | $5 0 | $0 0 | | |
| Equipment | $14 0 | $19 0 | $33 0 | $0 0 | $0 0 | $0 0 | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | | | |
| Sub-total | $54 2 | $316 9 | $371 1 | $233 4 | $124 4 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | $25 8 | $25 8 | $27 4 | $16 2 | | | |
| Project Total | $54 2 | $342 7 | $396 9 | $260 8 | $140 6 | $0 0 | $0 0 | $0 0 |
| Full-Time Equivalents (FTE) | 0 3 | 2 5 | 2 3 | 3 5 | 2 0 | | | |

| Budget Year Proposed Personnel Position | Months Budgeted | Cost |
|---|---|---|
| Biologist - GS 14 | 1 | $8 4 |
| Biologist - GS 12 | 1 2 | $5 9 |
| Biologist - GS 11 | 7 | $32 2 |
| Biologist - GS 9 | 7 | $26 6 |
| 2 Technician - GS 7 | 14 | $44 8 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This project also includes approved funding for January and February, 1993

** If not funded in FY 94, $55 5K will be needed for data analysis and report preparation

7 Jul 92

**1993** page of

Project Number 93-003
Project Title Salmon Egg to Pre-emergent Fry Survival
Sub-Project Hydrocarbon Lab, Egg Incubation, and Fry Rearing
Agency NOAA/NMFS/ABL

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| **Travel** | Anticipated travel between Cordova and Anchorage, Cordova, and Juneau and Anchorage for inter and intra-agency meetings between project principal investigators, biometrics staff, and peer reviewers Per diem is included |
| **Contractual** | Includes to access the Little Port Walter Hatchery and funds for hydrocarbon GC/MS spectrophotofluoremetry analyses of tissues and water from the dose response exposures |
| **Commodities** | Includes building materials for the incubator and rearing areas, fish food, fish vaccine, and fish antibiotics, other laboratory and office supplies, computer software (EXCEL) |
| **Equipment** | Purchases of PIT tags for segregating fish from different treatment groups which are reared in a common pen |



Project Number 93-003
Project Title Salmon Egg to Pre-emergent Fry Survival
Sub-Project Hydrocarbon Lab, Egg incubation and Fry Rearing
Agency NOAA/NMFS/ABL

FORM 3B
SUB-
PROJECT
DETAIL

Project Description The ADF&G portion of this project continues to monitor pink salmon egg to pre-emergent fry survival in oiled and unoiled streams, and it examines the effects of stream characteristics unrelated to oiling which may partially or completely explain mortality differences observed The ADF&G genetics lab processes some samples directly and receives others from theNMFS portion of this study to provide laboratory verification that field results observed for eggs in 1989, 1990, 1991 are consistent lethal and persistent genetic effects of

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $104 8 | $192 7 | $297 5 | $254 8 | $220 4 | $147 9 | $147 9 | $591 6 |
| Travel | $19 0 | $11 4 | $30 4 | $4 0 | $4 0 | $3 8 | $3 8 | $15 2 |
| Contractual | $3 5 | $83 0 | $86 5 | $44 1 | $54 1 | $38 1 | $38 1 | $152 4 |
| Commodities | $0 0 | $21 5 | $21 5 | $22 5 | $14 5 | $10 0 | $10 0 | $40 0 |
| Equipment | $67 0 | $0 0 | $67 0 | $0 0 | $0 4 | $0 0 | $0 4 | $1 6 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $194 3 | $308 6 | $502 9 | $325 4 | $293 4 | $199 8 | $200 2 | $800 8 |
| General Administration | $15 9 | $34 7 | $50 6 | $41 3 | $36 9 | $24 9 | $24 9 | $98 4 |
| Project Total | $210 2 | $343 3 | $553 5 | $366 7 | $330 3 | $224 7 | $225 1 | $899 2 |
| Full-Time Equivalents (FTE) | 4 7 | 2 2 | 3 4 | 6 6 | 5 4 | 2 7 | 2 7 | 10 8 |

| Budget Year Proposed Personnel Position | Months Budgeted | Cost |
|---|---|---|
| 1 FB III | 1 9 | $15 0 |
| 1 Biometrician | 3 6 | $20 9 |
| 1 Reasearch Analyst I | 3 6 | $14 6 |
| 1 FB II | 4 1 | $20 8 |
| 1 FB I | 6 6 | $35 7 |
| 2 FWT III | 1 7 | $12 6 |
| 8 FWT II | 6 8 | $45 2 |
| 2 Program Manager | 2 | $15 0 |
| 1 Analyst Programmer IV | 1 1 | $6 7 |
| 1 Analyst Programmer II | 0 7 | $3 1 |
| 1 Publication Specialist II | 0 7 | $3 1 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This project also includes approved funding for January and February, 1993

** If not funded in FY 94, $60 0K is needed for data analyses and report preparation

7 Jul 92

Project Number 93-003
Project Title Salmon Egg to Pre-emergent Fry Survival
Sub-Project Field study and genetics lab
Agency ADF&G

**1993**

page of

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| **Travel:** | Anticipated travel between Cordova and Anchorage, Cordova, and Juneau and Anchorage for inter and intra-agency meetings between project principal investigators, biometrics staff, and peer reviewers. Per diem is included. |
| **Contractual:** | Includes vessel charter for field sampling, air charter for sampling and access to hatchery where rearing experiment is bding conducted. Also included are contracts for histopathological, genetic, and MFO analyses as well as maintenance contracts for project equipment. |
| **Commodities:** | Includes field sampling supplies, some building materials for the incubator set up, and laboratory supplies for genetic work. |
| **Equipment:** | No ADF&G equipment purchases for the period 1 Jan 93 to Sep 93. |

17-Jul-92

**1993**

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Project Number: 93-003
Project Title: Salmon Egg to Pre-emergent Fry Survival
Sub-Project: ~~Hydrocarbon Lab, Egg incubation and Fry Rearing~~ Field Studies and Genetics Lab
Agency: ADF&G

FORM 2B 3
PROJECT DETAIL

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-004/013

**Project Source**

**Project Title** Documentation, Enumeration, and Preservation of Genetically Discrete Wild Populations of Pink Salmon Impacted by EVOS in Prince William Sound

**Project Category** Restoration Monitoring and Management Action

**Project Type** Fish and Shellfish

**Lead Agency** Alaska Department of Fish and Game

**Cooperating Agencies** U S Forest Service

**Project Term** **Start Date** 03/01/93 **Finish Date** 6/30/95

**INTRODUCTION** Historically, approximately five-hundred-million wild pink salmon fry emerged from streams throughout Prince William Sound (PWS) each year to migrate seaward Adult returns of wild pink salmon averaged from 10 to 15 million fish annually Unlike returns of adult hatchery fish, these returning wild-stock adults play a critical role in the total Prince William Sound ecosystem, they convey essential nutrients and minerals from the marine ecosystem to estuaries, freshwater streams, and terrestrial ecosystems Both juveniles and adults are important sources of food for many fish, birds, and mammals Wild pink salmon also play a major role in the economy of PWS because of their contribution to commercial, sport, and subsistence fisheries in the area

Wild-stock pink salmon suffered both direct lethal and sublethal injuries as a result of the Exxon Valdez oil spill (EVOS) Pink salmon embryos and alevins suffered increased mortality, diminished growth, and a high incidence of somatic cellular and genetic abnormalities as a result of spawning ground contamination and rearing in oiled areas Wild stocks most impacted by the *Exxon Valdez Oil Spill* (EVOS) are also subject to excessive exploitation in mixed stock fisheries of western PWS which are targeting on large hatchery returns Also, in 1989 the commercial harvest of pink salmon had to be shifted away from the hatchery and wild stocks in the oiled areas to target only the wild stocks in eastern Prince William Sound This resulted in over-harvest and depletion of these stocks evidenced by general run failures of stocks in the northern and eastern portions of the Sound in 1991

Furthermore, coded-wire tag recovery results from NRDA F/S Study 3 indicate that damaged wild salmon streams located on hatchery stock migratory corridors in western PWS experience a high incidence of genetic interchange as a result of straying from the burgeoning hatchery populations Ample evidence in the literature suggests that hatchery fish are ill adapted to wild conditions and that genetic interchange between hatchery and wild stocks may lead to reduced fitness of wild stocks The combined effects of oil damage, excessive harvest, and genetic burden on wild fish may result in an overall reduction in population size, genetic diversity, and fitness of PWS salmon populations

The proposed damage assessment and resource monitoring study will consist of field studies conducted from Cordova and laboratory studies in Anchorage The majority of the funds support PWS

field studies and will contribute to the local economy of Cordova The project may result in altered harvest management strategies in PWS fisheries and will contribute to the natural recovery process for PWS pink salmon populations

**WHAT** In this project we will monitor the recovery of damaged wild streams through timely and accurate **Project Number** 93-004/013

estimates of wild pink spawning escapements, quantify the extent of hatchery stock staying into wild salmon streams, and examine the genetic structure of representative salmon populations from throughout PWS, measuring both within and between population diversity Genetic sample sites will include those which tagging results indicate are highly susceptible to hatchery straying (see Restoration Science project R60) in order to better clarify putative EVOS impacts on hatchery/wild-stock interactions

Fisheries managers will use escapement data inseason to enact harvest management strategies which insure that sufficient fish escape fisheries to spawn in streams damaged by EVOS Straying data will be used in conjunction with genetic data to develop alternate hatchery production strategies and develop criteria for wild-stock sanctuary areas where straying is minimal or does not occur An understanding of the population genetics of affected pink salmon populations will also be used to guide restoration management decisions including those regulating commercial harvest Genetic monitoring and risk assessment are also required to evaluate any supplemental restoration programs in a manner similar The Northwest Power Planning Council currently uses such a monitoring and evaluation program for their supplemental restoration program

The specific objectives of the project are as follows

1 Estimate straying rates of hatchery and wild stocks of pink salmon through systematic sampling of spawner carcasses in approximately 50 streams in PWS
2 Monitor the recovery and status of pink salmon stocks through total weir enumeration of intertidal and upstream spawning escapements in eight streams which are representative of streams injured by the oil spill
3 Define the genetic structure of pink salmon stocks in the EVOS-affected area in order to better direct harvest management decisions made for restoration purposes on a stock-specific rather than species-specific basis
4 Provide information needed for genetic risk assessment and genetic monitoring of supplementation programs (e g , as a result of Study R105) to guide stock-specific restoration and enhancement

**WHY** The most cost effective method for restoring injured wild pink salmon populations to their pre-spill condition is through modification of the human uses which affect their natural recovery Commercial harvest is the major factor controlling wild pink salmon spawning escapement and reproductive success The ability to impose stock-specific management on the commercial fishery and reduce fishery exploitation of oil impacted wild stocks is vital to their restoration One of the most important pieces of information for stock-specific management of fisheries is timely and accurate escapement data which this project will supply

The importance of pink salmon in the PWS ecosystem is predicated upon their abundance and their diverse spatial and temporal distribution Genetic interchange between hatchery and wild fish may lead to reductions in the overall fitness and population size of wild stocks and will most certainly alter historic

spatial and temporal abundance of wild pink salmon in the PWS ecosystem The status of wild salmonid populations was a concern prior to the oil spill and the documented damage to these populations further increases the concern and the need to understand the underlying population structure and amount of gene exchange among populations Reproductively isolated populations are by definition self-recruiting--the adults generally do not stray to repopulate depleted areas Therefore, basing management decisions on known population structure is critical to facilitate successful restoration of reproductively isolated units

Hatchery supplementation of wild pink salmon stocks cannot be contemplated without knowledge of the underlying population structure (see State of Alaska Genetic Policy) To do so would put the unique adaptive advantages of the wild stocks at risk The same population genetic data will provide baseline for possible mixed-stock fishery analysis (e g , see Restoration Science Project R59) and possible genetic marking Genetic marks are now used to manage the harvest of Fraser River pink salmon, for example, and such techniques may ameliorate the hatchery/wild-stock management problems exacerbated by the EVOS

**Project Number** 93-004/013

**HOW** Adult salmon will be counted through weirs at eight streams where outmigrating fry were enumerated and coded-wire tagged and where adults were counted in previous years Weir crews will perform daily ground surveys of intertidal and upstream portions of the weired streams and at ten additional streams At weekly intervals they will also apply Peterson disk tags to fish as they enter weired streams During daily foot surveys crews will enumerate live and dead pink salmon, record Peterson disk tag recoveries from dead fish, and record the number of carcasses with missing adipose fin denoting the possible presence of a coded-wire tag Heads from adipose clipped carcasses will be emoved and sent to a centralized laboratory for tag extraction and decoding Paired aerial and weir data will be used to calibrate aerial estimation procedures and estimate observer bias Weir data, daily counts of live and dead fish, and results of Peterson disk tagging studies will be used to estimate average stream life for streams in the PWS aerial survey program Improved stock specific estimates of spawning escapements combined with commercial catch contribution data will allow fisheries managers to accurately assess the impacts of the harvest management strategies on impacted stocks

Pink salmon populations sampled during the escapement enumeration project represent a small percentage of the over 900 anadromous spawning populations in Prince William Sound To better document the full extent of hatchery staying this project will expand tag recovery efforts in approximately 50 important spawning streams throughout PWS Tag recoveries will be accomplished through multiple ground surveys during periods of peak salmon returns Tag recovery sampling will be identical to the sampling at weired systems

Tissue samples for baseline genetic data will be taken from 100 fish from two hatcheries and from spawned-out fish in 18 of the 50 streams sampled for straying Both early and late stocks and inter-tidal and upstream-spawning stocks will be included among the 18 sampled Heart, liver, and muscle tissue and aqueous humor will be removed from each individual sampled, frozen immediately on liquid nitrogen, and returned to Anchorage for storage at -80° C Results of genetics samples will be used to define the genetic structure of pink salmon populations in PWS and identify reproductively isolated populations Results of coded-wire tag recovery data will be analyzed and used in concert with genetic data to identify areas with no evidence of straying which could be designated as genetic sanctuaries which could be protected by future management actions and hatchery release strategies Those oiled areas with documented high levels of straying should be monitored to examine the long term effects

of straying and the resultant wild/hatchery salmon hybridization on the overall fitness of wild populations

Genetic data will be collected using the techniques of allozyme protein electrophoresis on all samples and restriction fragment length polymorphism (RFLP) analysis of mitochondrial DNA (mtDNA) on a subset of samples These procedures are well-established and currently being conducted in the genetics laboratory of ADF&G As appropriate, data will be merged into the state and federal inter-agency coast-wide databases

**ENVIRONMENTAL COMPLIANCE** ADF&G has Title 16 permits for all of the proposed intertidal weirs Corp of Engineers permits are not required since none of the weirs are on navigable waters All sampling on weired and unweired systems is covered by ADF&G biological collection permits None of the proposed camps or structures are permanent nor will they permanently alter the study sites in any way All weirs, camp structures, and equipment will be removed from study sites upon completion of the project

| | | |
|---|---|---|
| **WHEN** December 1993 | - | Interim Report 1 including Summary of weir counts, live and dead counts, stream life estimates, aerial surveyor bias estimates by stream, and hatchery straying rates by hatchery and stream for 1993 |
| December 1994 | - | Interim Report 2 including Summary of 1994 escapement and straying data and comparison of 1993 and 1994 results Escapement and straying data analyses will be in the same format as 1993 report and including a comparison of 1993 and 1994 results |
| June 1995 | - | Final Report |

EXXON VALDEZ TRUSTEE COUNCIL

Project Description This project quantifies the extent of hatchery stock straying into wild streams in PWS, it assesses the health of oil damaged streams by enumerating numbers of adults which escape commercial harvest to spawn, and it collects samples to be used by the genetic monitoring project to characterize the genetic structure of PWS pink salmon population

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | *** FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $452 7 | $550 1 | $1,002 8 | $695 1 | $603 7 | $545 0 | $545 0 | $545 0 |
| Travel | $4 1 | $8 0 | $12 1 | $14 4 | $5 4 | $3 5 | $3 5 | $3 5 |
| Contractual | $50 9 | $168 5 | $219 4 | $175 0 | $180 0 | $133 0 | $133 0 | $133 0 |
| Commodities | $24 3 | $57 0 | $81 3 | $61 5 | $44 0 | $39 5 | $39 5 | $39 5 |
| Equipment | $4 3 | $33 0 | $37 3 | $46 0 | $25 0 | $5 0 | $5 0 | $5 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $536 3 | $816 6 | $1,352 9 | $992 0 | $858 1 | $726 0 | $726 0 | $726 0 |
| General Administration | $71 5 | $82 5 | $154 0 | $104 2 | $100 9 | $81 8 | $81 8 | $81 8 |
| Project Total | $607 8 | $899 1 | $1,506 9 | $1,096 2 | $959 0 | $807 8 | $807 8 | $807 8 |
| Full-time Equivalents (FTE) | 8 9 | 11 9 | 20 8 | 11 3 | 11 3 | 11 3 | 11 3 | 11 3 |

**Budget Year Proposed Personnel**

| | Position | Months Budgeted | Cost |
|---|---|---|---|
| 1 | FB III | 3 | $17 7 |
| 1 | FB II | 7 | $37 6 |
| 2 | FB I | 11 | $47 9 |
| 11 | FWT III | 46 | $185 2 |
| 13 | FWT II | 49 | $137 7 |
| 1 | A/P IV | 2 | $10 7 |
| 1 | A/PII | 1 | $4 1 |
| 1 | PS II | 1 | $4 4 |
| 1 | Biometrician I | 9 | $45 1 |
| 1 | Biometrician II | 6 | $30 5 |
| 1 | Research Analyst I | 4 | $13 9 |
| 1 | Program Manager | 2 | $15 0 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** If not funded in FY 94, $261 2K is needed for camp demobilization and final report preparation

*** Genetics monitoring not included after FY 95

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page of

Project Number 93-013
Project Title Documentation, Enumeration, and Preservation of Genetically Discrete Wild Populations of Pink Salmon in PWS
Agency ADF&G

FORM 2A PROJECT DETAIL

| | |
|---|---|
| **Travel** | Anticipated travel between Anchorage - Cordova - Juneau by project staff, biometicians, and data analyst Per diem included |
| **Contractual** | Aircraft charters for field camp supply flights (48K) One 50 day vessel contract for stray tag recoveries (50K) DOT P/U truck lease (3K) Leases with native corporations for field camps on native lands (9K) Storage space lease(2K) Weir fabric and welding (2K) FRED Division tag lab cost for processing coded wire tagged pink salmon heads (17K) Repair and maintenance of equipment (5K) Charters for genetics lab, field collection (45 5K) |
| **Commodities** | Office supplies, scientific supplies for field use Food for field camps (18/person/day) Rain gear, boots, gloves (@200/person) Fuel for field camps (8K) Software and software support (1K) |
| **Equipment** | Outboard engines for stray tag recoveries (7K) Handheld VHF radios (1 5K) Misc camp equipment tools, generators (7K) Genetics Lab Equipment (20K) |



Project Number 93-013
Project Title Documentation, Enumeration, and Preservation of Genetically Discrete Wild Populations of Pink Salmon in PWS
Agency ADF&G

FORM 2B
PROJECT
DETAIL

# EXXON VALDEZ OIL SPILL PROJECT TRUSTEES

## I. TRANSMITTAL

## II. BASIC INFORMATION

Project Number 93005
Project Source
Project Title Cultural Resources Information, Education and Interpretation
Project Category Management Action
Project Type Archaeology
Lead Agency USDA Forest Service
Cooperating Agencies NPS, ADNR
Project Term Start Date 1/1/93 (day/month/year) Finish Date 9/30/93 (day/month/year)

## III. INTRODUCTION

The Exxon Valdez Oil Spill affected cultural resources in much of southcentral Alaska These resources are ethnographically within the Alutiiq, or Pacific Eskimo, area Known sites in the region contain information from as long as 8,000 years ago to the early 20th century A D These sites are the non-renewable source of date which are the basis of knowledge about past peoples and their relationship to the marine and terrestrial animals, plants, and other natural resources of the area

One of the most significant injuries to cultural resources as a result of the Exxon Valdez oil spill was vandalism and looting resulting from increased visibilityand knowledge of site locations Mitigation of this injury involves education of the public about the valuable cultural heritage information preserved in these archaeological sites, and the losses which result from the unscientific digging and looting of sites

The proposed mitigation measures willoccur for the most part in oil spill affected communities Increased circulation of existing brochures and posters is proposed for Anchorage, communities in Prince William Sound, on the Kenai Peninsula, and on Kodiak Island These same communities willbe included in Alaska Archaeology Week activities, the expansion of which would be coordinated in Anchorage Several projects will be developed locally and made available to communities both within the Oil Spill area and throughout the state These include the proposed portable cultural resources exhibits, public service announcements, educational videos, curriculum developed to state educational standards, and educational pamphlets to be distributed through museums, visitor centers, tour operators, and other public outlets Local groups willbe organized and promoted in oil spill affected communities to involve interested amateurs in archaeology under professional guidance Curriculum development willoccur primarily in the communities of southcentral Alaska, and secondarily state-wide through the Department of Education and individual school districts

## IV. WHAT

The overall goal and purpose of these projects it to educate the public to the value and finite nature of cultural resources, thereby effecting value and behavioral changes so that future site looting and vandalism is minimized or ended This will be accomplished through

1 Development and distribution of brochures, public service announcements, and videos concerning the heritage value of cultural resources in the oil spill area
2 Development, construction, and circulation of 6 portable exhibits on the cultural resources of the oil spill area
3 Design, production and implementation of curriculum for elementary through high school and teacher training is proposed This effort will be coordinated with local, State and Federal agencies, private institutions, and other interested parties
4 Expansion of Alaska Archeology Week and associated activities
5 Organization and promotion of local amateur groups interested in cultural resources
6 Interpretation of cultural resources at sites on National Forest and State Parks

## V WHY

Although some vandalism and looting of archaeological sites had occurred prior to the oil spill, the increased number of people in the area during clean-up activities and the increased knowledge of site locations led to a higher rate of vandalism of known sites Because it is impossible to reverse this increase of knowledge about cultural resources, an educational response is necessary concerning the significance and proper treatment of archaeological sites These educational projects will develop a stewardship ethic reflecting an appreciation for cultural resources, and will enable individuals to be directly involved in furthering the understanding of the prehistory of Southern Alaska

## VI. HOW

Several agencies will cooperate in achieving the desired education results

1 A Department of Interior National Park Service (NPS) archaeologist will arrange for production and distribution of additional copies of existing ARPA publications and posters, and will design and supervise the production and circulation of the six traveling cultural resource exhibits This archaeologist will arrange an expansion of the Alaska Archaeology Week program to include oil spill affected communities and will prepare, with the assistance of a Visual Information Specialist, three public service announcements concerning cultural resources

2 Three archaeologists working for the Alaska Department of National Resources (ADNR) will develop new cultural resource pamphlets to distribute to the general public, as well as a script for a 15-20 minute video about the value of archaeological sites The actual video will be produced under contract Most importantly, the archaeologist will organize and promote, in oil spill affected communities, groups interested in local

archaeology In connection with these groups, the archaeologists will develop activities which involve amateurs in archaeological work under the guidance of professionals

3 The Kodiak and Kenai Peninsula State Parks offices will develop and present programs for school-age children on the importance of protecting cultural resources, and will contract to develop visitor exhibits

4 Under USDA Forest Service contract a curriculum will be developed by an individual or agency who will be responsible for design, production and dissemination, working cooperatively with Forest Service, NPS, ADNR, Native organizations and other interested parties Summer institutes will be the venue for teacher training and materials development, to be followed by field testing of materials in classrooms Subsequent summer institutes will emphasize rewriting of the curriculum, with finalization envisioned by the fifth institute Teachers who have been trained and have field tested material will become trainers of other teachers within districts and at institutes

## VII. ENVIRONMENTAL COMPLIANCE

Development of curriculum, publications, and videos will comply with the requirements of the National Environmental Policy Act as categorical exclusions since they are being exercised at the "Planning Level" in which the environment will not be affected The activities of the local groups organized and promoted by the State of Alaska archaeologists will be accomplished within the NEPA regulations and guidelines

## VIII WHEN

Project development and execution will occur between 1/1/93 and 9/30/98

Project Description CULTURAL RESOURCES INFORMATION, EDUCATION, AND INTERPRETATION
NPS, DNR, USDA-FS

| Budget Category | Approved 1 Oct-92 28 Feb 93 | Proposed* 1 Mar-93 30-Sep 93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $65 6 | $154 3 | $219 9 | $207 0 | $255 9 | $210 3 | $161 3 | |
| Travel | $5 2 | $12 3 | $17 5 | $34 1 | $34 1 | $34 1 | $26 8 | |
| Contractual | $28 9 | $67 6 | $96 5 | $95 1 | $100 4 | $97 4 | $91 4 | |
| Commodities | $8 2 | $19 3 | $27 5 | $22 0 | $22 0 | $21 0 | $19 7 | |
| Equipment | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Sub-total | $107 9 | $253 5 | $361 4 | $358 2 | $412 4 | $362 8 | $299 2 | $0 0 |
| General Administration | $11 9 | $27 9 | $39 8 | $31 0 | $38 4 | $31 6 | $24 2 | |
| Project Total | $119 8 | $281 4 | $401 2 | $389 2 | $450 8 | $394 4 | $323 4 | $0 0 |
| Full time Equivalents (FTE) | 3 7 | 3 7 | 3 7 | 3 4 | 13 4 | 2 2 | 1 2 | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| Archaeologist II (split, 2 positions) | 10 | $61 3 |
| Archaeologist I | 5 | $25 0 |
| Park Ranger II | 1 | $4 0 |
| Natural Resources Tech II | 1 | $3 5 |
| Chief, History and Archaeology | 0 75 | $5 3 |
| Visual Information Specialist GS 12 | 2 | $9 6 |
| Archaeologist GS 9 | 12 | $36 0 |
| Contractor or PI GS-11 | 8 | $44 0 |

| Other Positions | | Comment |
|---|---|---|
| clerk/typist III | 3 months | $4 9 |
| Archaeologist III | 4 | $24 7 |
| Project manager | 25 | $1 5 |
| Close out costs estimate | | $33,600 |

17 Jul 92

**1993**



Project Number 93-005
Project Title CULTURAL RESOURCES IEI
Agency USDA FOREST SERVICE

FORM 2A
PROJECT
DETAIL

| | | | |
|---|---|---|---|
| **Travel** | USDA-FS | | $6 5 |
| | NPS | | $0 0 |
| | DNR | | $11 0 |
| | | subtotal | $17 5 |
| **Contractual** | USDA-FS | | $0 0 |
| | NPS | | $66 0 |
| | DNR | | $30 5 |
| | | subtotal | $96 5 |
| **Commodities** | USDA-FS | | $3 2 |
| | NPS | | $23 0 |
| | DNR | | $1 3 |
| | | subtotal | $27 5 |
| **Equipment** | | | $0 0 |

| | |
|---|---|
| sub 2A | $219 9 |
| subGA | $39 8 |
| Total | $401 2 |

17 Jul 92



Project Number 93-005
Project Title CULTURAL RESOURCES IEI
Agency USDA FOREST SERVICE

FORM 2B
PROJECT
DETAIL

Project Description CULTURAL RESOURCES INFORMATION, EDUCATION, AND INTERPRETATION
PUBLIC EDUCATION, AND CURRICULUM DEVELOPMENT COMPONENT

| Budget Category | Approved 1 Oct-92 28-Feb 93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $22 1 | 51 6 | $73 7 | $117 4 | $161 3 | $161 3 | $161 3 | |
| Travel | $1 9 | 4 6 | $6 5 | $26 8 | $26 8 | $26 8 | $26 8 | |
| Contractual | $0 0 | 0 | $0 0 | $86 1 | $91 4 | $91 4 | $91 4 | |
| Commodities | $0 9 | 2 3 | $3 2 | $19 7 | $19 7 | $19 7 | $19 7 | |
| Equipment | $0 0 | 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Capital Outlay | $0 0 | 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Sub-total | $24 9 | $58 5 | $83 4 | $250 0 | $299 2 | $299 2 | $299 2 | $0 0 |
| General Administration | $3 3 | 7 7 | $11 0 | $17 6 | $24 2 | $24 2 | $24 2 | |
| Project Total | $28 2 | $66 2 | $94 4 | $267 6 | $323 4 | $323 4 | $323 4 | $0 0 |
| Full time Equivalents (FTE) | 1 0 | 1 0 | 1 | 1 2 | 1 2 | 1 2 | 1 2 | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| CONTRACTOR OR PI GS11 | 8 | $44 0 | |
| CLERK/TYPIST III | 3 | $4 9 | Close out costs, in the event that the project is not continued into |
| ARCHEOLOGIST III | 4 | $24 7 | FY94, are estimated at $6,200 |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul-92

**1993**



Project Number 93-005
Project Title CULTURAL RSOURCES IEI
Sub-Project PUBLIC EDUCATION - FEDERAL
Agency USDA FOREST SERVICE

FORM 3A
SUB-
PROJECT
DETAIL

| | | |
|---|---|---|
| **Travel** | Visit oil spill area and summer institutes | $0 5 |
| | per diem, 10 days @ $100 | $1 0 |
| | Coordination and proj development, trainig in communities, for DNR Archaeologists | $5 0 |
| sub-tot | | $6 5 |
| **Contractual** | | |
| sub-tot | | $0 0 |
| **Commodities** | Office supplies | $0 4 |
| | Books and instruction materials | $1 5 |
| | Telephone | $0 5 |
| | reproduction and postage, each @ $400 | $0 8 |
| sub-tot | | $3 2 |
| **Equipment** | | |
| sub-tot | | $9 7 |
| sub GA | | $11 0 |
| sub 3A | | $73 7 |
| TOTAL | | $94 4 |

17 Jul 92

**1993**



Project Number 93-005
Project Title CULTURAL RESOURCES IEI
Sub-Project PUBLIC EDUCATION - FEDERAL
Agency USDA FOREST SERVICE

FORM 3B
SUB-
PROJECT
DETAIL

Project Description PUBLIC EDUCATION - ARCHAEOLOGY

| Budget Category | Approved 1 Oct-92 28-Feb 93 | Proposed* 1-Mar-93 30-Sep 93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $29 7 | 69 4 | $99 1 | $44 0 | $49 0 | $49 0 | | |
| Travel | $3 3 | 7 7 | $11 0 | $7 3 | $7 3 | $7 3 | | |
| Contractual | $9 1 | 21 4 | $30 5 | $6 0 | $6 0 | $6 0 | | |
| Commodities | $0 4 | 0 9 | $1 3 | $1 3 | $1 3 | $1 3 | | |
| Equipment | $0 0 | 0 | $0 0 | $0 0 | $0 0 | $0 0 | | |
| Capital Outlay | $0 0 | 0 | $0 0 | $0 0 | $0 0 | $0 0 | | |
| Sub-total | $42 5 | $99 4 | $141 9 | $58 6 | $63 6 | $63 6 | $0 0 | $0 0 |
| General Administration | $5 1 | 11 9 | $17 0 | $7 8 | $7 8 | $7 8 | | |
| Project Total | $47 6 | $110 8 | $158 9 | $66 4 | $71 4 | $71 4 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | | 1 5 | | | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Archaeologist II | 10 | $61 3 | |
| Archaeologist I | 5 | $25 0 | Archaeologist II split between 2 positions |
| Park Ranger II | 1 | $4 0 | Close out costs, in the event that the project is not continued into |
| Natural Resources Tech II | 1 | $3 5 | the 2nd year, are estimated at about $18,400 |
| Chief, History and Archaeology | 0 75 | $5 3 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul-92

**1993**



Project Number 93-005
Project Title CULTURAL RESOURCES IEI
Sub-Project PUBLIC EDUCATION - STATE
Agency DNR

FORM 3A
SUB-PROJECT DETAIL

| | | |
|---|---|---|
| **Travel** | Program development and presentation travel, travel to sites, curriculum development coordination | $11 0 |
| sub-tot | | $11 0 |
| **Contractual** | Preparation and production of video | $30 5 |
| sub-tot | | $30 5 |
| **Commodities** | Office supplies | $1 3 |
| sub-tot | | |
| **Equipment** | | |
| sub-tot | | $0 0 |
| sub GA | | $17 0 |
| sub 3A | | $24,447 0 |
| TOTAL | | $158 2 |

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Project Number 93-005
Project Title CULTURAL RESOURCES IEI
Sub-Project PUBLIC EDUCATION - STATE
Agency DNR

FORM 3B
SUB-
PROJECT
DETAIL

Project Description CULTURAL RESOURCES INFORMATION, EDUCATION, AND INTERPRETATION, INTERAGENCY PUBLIC EDUCATION, NPS COMPONENT

| Budget Category | Approved 1-Oct-92 28 Feb-93 | Proposed* 1-Mar-93 30-Sep 93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $13 7 | 31 9 | $45 6 | $45 6 | $45 6 | | | |
| Travel | $0 0 | 0 | $0 0 | $0 0 | $0 0 | | | |
| Contractual | $19 8 | 46 2 | $66 0 | $3 0 | $3 0 | | | |
| Commodities | $6 9 | 16 1 | $23 0 | $1 0 | $1 0 | | | |
| Equipment | $0 0 | 0 | $0 0 | $0 0 | $0 0 | | | |
| Capital Outlay | $0 0 | 0 | $0 0 | $0 0 | $0 0 | | | |
| Sub-total | $40 4 | $94 2 | $134 6 | $49 6 | $49 6 | $0 0 | $0 0 | $0 0 |
| General Administration | $3 5 | 8 | $11 5 | $7 0 | $7 0 | | | |
| Project Total | $43 9 | $102 2 | $146 1 | $56 6 | $56 6 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | 1 2 | 1 2 | 1 2 | 1 2 | 1 2 | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| GS12 Visual Info Specialist | 2 | $9 6 | |
| GS9 Archaeologist | 12 | $36 0 | Close-out costs, in the event that the project is not continued into FY94, are estimated at 9,000 |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul-92

Project Number 93-005
Project Title CULTURAL RESOURCES IEI
Sub-Project INTERAGENCY PUBLIC EDUCATION
Agency NPS

FORM 3A SUB-PROJECT DETAIL

1993

| | | |
|---|---|---|
| **Travel** | | |
| sub-tot | | $0 0 |
| **Contractual** | Brochure/Printing Costs | $18 0 |
| | Poster/Printing Costs | $9 0 |
| | Traveling Exhibits | $36 0 |
| | Public Service Announcements | $3 0 |
| sub-tot | | $66 0 |
| **Commodities** | Mailing and Shipping costs | $23 0 |
| sub-tot | | |
| **Equipment** | | |
| sub-tot | | $0 0 |
| sub GA | | $11 5 |
| sub 3A | | $45 6 |
| TOTAL | | $141 4 |

17 Jul 92

**1993**



Project Number 93-005
Project Title CULTURAL RESOURCES IEI
SubProject INTERAGENCY PUBLIC EDUCATION
Agency NPS

FORM 3B
SUB-
PROJECT
DETAIL

# *BASIC INFORMATION*

**Project Source**

**Project Number** 93-006

**Project Title** Site-Specific Archeological Restoration (Interagency)

**Project Category** Restoration Management Actions

**Project Type** Archeology

**Lead Agency** National Park Service

**Cooperating Agencies** State of Alaska (DNR), U S Fish and Wildlife, U S Forest Service

**Project Term** Five years for restoration action component, 10 years for monitoring component (January 1, 1993 to December 30, 2002)

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## INTRODUCTION

A two-phase archeological restoration assessment of all existing and accessible oil spill response documentation has revealed that there is solid evidence for substantive injury to 24 known archeological sites that can be directly linked to the Exxon Valdez oil spill event The sources of injury include oiling, oil spill beach cleanup actions, and vandalism Of these three identified sources, cleanup activities and vandalism appear to have resulted in the most clear-cut cases of injury to archeological sites (e g loss or destruction of diagnostic artifacts, illegal excavation, disturbance of human remains) The effects of oiling are more problematical, but the available evidence indicates that oil penetration impairs the ability of radiocarbon samples to yield accurate dates and may alter archeologically-relevant soil chemistry

In June 1992 the Trustees convened a multi-agency panel of experts in the archeology of the oil spill region chaired by Martin McAllister, the nation's foremost expert in archeological restoration This panel gave thorough review to all available oil spill injury data and arrived at the following conclusions

1 Nineteen known archeological sites had been injured by cleanup activities or vandalism related to the oil spill event

2 A total of 10 known sites had been affected by moderate to heavy oiling (5 of which are also among the 19 sites injured by cleanup and vandalism)

3 Based on the total known sites and projected archeological sites in the oil spill pathway supplied by the Exxon Company contractors and a special Trustee-sponsored GIS/statistical study by the State University of New York, it is estimated that

a A total of 112 archeological sites suffered substantive injury from oil spill cleanup or vandalism tied to the oil spill event

b A total of 59 archeological sites were subjected to moderate to heavy oiling during the oil spill event (at least half of these sites also number among the 112 sites affected by other sources of injury)

Note These numbers represent the most conservative, statistically-derived estimate of injury endorsed by the "McAllister Panel " The next-lowest estimates put forward by Dr Al Dekin's injury study are 338 and 155, respectively, statistically valid estimates, but based on what appear to be less valid assumptions about the nature and distribution of injury

The purpose of this project is to conduct site-specific restorative actions at injured archeological sites on federal or state lands within the oil spill pathway Guidance for the proposed work is drawn from Section 14 of the Archeological Resources Protection Act (ARPA) None of the planned work duplicates previous studies, it is based on a careful review of the results of earlier injury investigations

**WHAT**

The goal of this project is to ameliorate injury to archeological sites that were impacted by oiling, oil spill cleanup, or vandalism as a direct result of the Exxon Valdez oil spill event The measures include

1 Full damage examination and analysis of the injured sites

2 Recovery analysis and curation (and where appropriate, repatriation) of any remaining archeological resources that were exposed or disturbed by oil spill related injury

3 Data recovery to compensate for the loss of important archeological information at injured sites and/or the stabilization and physical repair of disturbed areas within injured sites

**WHY**

Archeological sites constitute a category of finite, non-renewable resources managed by the state and federal governments for the public benefit These resources represent a major part of the cultural heritage of the United States and injury to resources of this type results not only in the loss of important scientific data about the human past but in a irrevocable diminution of our nation's historic patrimony The restorative measures proposed herein are designed to either repair physical injury or reduce the loss of important archeological information caused by injury Physical repair includes such actions as restoring trampled protective vegetation at a site or filling in a looter's hole Data recovery is used to recover what bits of information can be

salvaged from the area of an illegal excavation--in a sense, restoring to the public what information has been potentially lost by means of scientific investigations If restorative measures are not taken, current signs of vandalism may provoke further vandalism, disturbed archeological soils will most likely result in accelerated erosion of archeological fabric, and altered artifact patterns and contaminated radiocarbon samples will probably play subtle havoc with future archeological interpretations in the region--one of Alaska's richest but least known archeological zones In recognition of the archeological importance of the area, the National Park Service has already committed a majority of its funds under a five-year National Archeological Survey project to conduct a sample survey and evaluation of coastal sites in Kenai Fjords and Katmai Other participating agencies lack a similar funding source, but they are committed to do what they can to increase survey coverage of the area

**HOW.**

The first step in this project will be to conduct site-specific restoration assessments at sites with documented injury, but where there is insufficient detail upon which to determine appropriate treatment (19 sites) The second step will be to carry out the indicated restorative action--either physical repair and/or data recovery In many cases, the anticipated restoration treatments will be limited in scope and difficulty and the necessary restorative actions will be taken immediately upon completion of the assessment A few may require carefully- planned return visits This portion of the work will be carried out in a two-year split (1993 and 1994) to permit sufficient time for planning larger and more complex restorative measures and to take advantage of corrective feedback from the first year of the project

A concurrent restoration assessment, coordinated with the first, will address long-term injury resulting from oiling Ten known sites that have been exposed to moderate to heavy oiling will be monitored for a period of 10 years to determine the effect of oil on radiocarbon samples, archeological soil chemistry, and protective site vegetation Research assessments of this type are specifically authorized by Section 14(c) of ARPA when the nature and level of injury to archeological sites remains uncertain or problematic The results will alert future researchers to any skewing effect the oil may have on archeological soil or radiocarbon specimens and make land managers aware of any residual threats to archeological sites (e g alterations or reductions in protective vegetative cover) The 10 sites selected for monitoring include 5 from the list of 19 sites with evidence of injury attributable to cleanup or vandalism and 5 additional sites that have been oiled, but presently have no documentation of other injury These 5 sites bring the total number of known injured sites to 24, the number mentioned at the beginning of this proposal

After completion of the assessment and treatment of previously-known injured sites in 1994 the work will be expanded in 1995 to discover additional injured sites, assess the nature and extent of the injury, and carry out appropriate treatment The favored approach will be a "find and restore strategy" A problem-oriented research design will be developed to guide this inventory The search will employ a stratified-random survey methodology to target the effort toward the most likely zones to contain injured archeological sites in need of treatment Continuation of the oiling assessment and the start of this work will depend on an interim review of the results from the first two years of the project and the express approval from the Trustee Council to proceed

The results of all project work will be published in both technical and popular formats As they become available, pertinent findings will be fed into the stewardship, site protection monitoring, and public education projects The research and restorative actions will follow the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation The Division of Polar Research, National Science Foundation, is recommended as the most appropriate source and coordinator for peer review of the project

**ENVIRONMENTAL COMPLIANCE.**

The proposed project is a categorical exclusion from the National Environmental Policy Act but subject to the provisions of the Historic Preservation Act, the Archeological Resources Protection Act, and the Native American Graves and Repatriation Act The project will be carried out in conformance with the consultative processes and standards demanded by these legislative mandates

**WHEN:**

1 January 1 to June 1, 1993--Consultation under the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act, preparation of work plans and research designs

2 June 1, 1993--Start of field work for restoration assessment and oil monitoring projects

3 December 30, 1994--Completion of restoration assessment for known injured sites

4 June 1, 1995--Start of fieldwork for discovery, assessment, and treatment of additional archeological sites

5 December 30, 1997--Completion of restoration assessments and treatment actions for additional injured sites

6 December 30, 2002--Completion of oil monitoring project

Project Description Site Specific Archeological Restoration (Interagency)

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 82 8 | $82 8 | $71 0 | $261 8 | $261 8 | $261 8 | $1,048 4 |
| Travel | | 33 8 | $33 8 | $33 8 | $161 7 | $161 7 | $161 7 | $782 4 |
| Contractual | | 107 7 | $107 7 | $105 2 | $218 7 | $218 7 | $218 7 | $1,367 8 |
| Commodities | | 7 1 | $7 1 | $7 1 | $47 6 | $47 6 | $47 6 | $201 9 |
| Equipment | | 7 1 | $7 1 | $7 0 | $26 6 | $26 6 | $26 6 | $141 6 |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $238 5 | $238 5 | $224 1 | $716 4 | $716 4 | $716 4 | $3,542 1 |
| General Administration | | 20 1 | $20 1 | $18 0 | $54 6 | $54 6 | $54 6 | $386 1 |
| Project Total | $0 0 | $258 6 | $258 6 | $242 1 | $771 0 | $771 0 | $771 0 | $3,928 2 |
| Full-time Equivalents (FTE) | | 1 8 | 1 8 | 1 0 | 4 0 | 4 0 | 4 0 | * |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|

* Cannot be computed due to lack of equivalency between Federal and State personnel structure (see individual agency forms)

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993



Project Number 93-006
Project Title Site Specific Archeological Restoration
Agency NPS

FORM 2A
PROJECT
DETAIL

| | | | |
|---|---|---|---|
| **Travel** | Per Diem 14 4<br>Transporation 18 8 | (Perdiem and Transporation derived from careful calculation of actual costs by "McAllister Panel") | |
| **Contractual** | Film Processing 1 0<br>Report Duplication 0 6<br>Sample Processing 13 8 | * Curation 68 3<br>** Repatriation 15 0<br>Air and Boat Charter 11 5 (State only) | (Large contracts, curation and sample processing assigned to NPS) |
| **Commodities** | Film, Videotape, Bags, Tags, Ammunition, Sample jars, etc 6 7 | | |
| **Equipment** | Basic field equipment --- floatation work suits, 2-way radios, E P I R B s, safety emergency kits, weatherproof VHS camcorders, tents, shovels, sledge hammers, etc 6 2 (Equipment costs distributed by agency on agency budget sheets) | | |
| General Administration | 15% of personnel = 12 4<br>7% of contractual = 7 7 | | |

* Curation One-time cost for curation in perpetuity, estimate in accordance with standards in 36 CFR Part 79 (Curation of Federally-owned and Administrated Archeological Collections)

** Repatriation of human remains, grave goods, or cultural patrimony in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), includes cultural anthropological consulting contracts, arrangements with recipient groups, etc

EXXON VALDEZ TRUSTEE COUNCIL

| Agency | Project Number | Project Title | Proposed 1-Jan-93 30-Sep-93 | | | |
|---|---|---|---|---|---|---|
| NPS | 93-006 | Site Specific Archeological Restoration | 111 2 | | | |

17 Jul 92

**1993**



FORM 1B
AGENCY SUMMARY

Project Description Site Specific Archeological Restoration

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 9 1 | $9 1 | $7 8 | | | | |
| Travel | | 7 7 | $7 7 | $7 7 | | | | |
| Contractual | | 84 9 | $84 9 | $82 4 | | | | |
| Commodities | | 1 1 | $1 1 | $1 0 | | | | |
| Equipment | | 1 2 | $1 2 | $1 2 | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $104 0 | $104 0 | $100 1 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | | 7 3 | $7 3 | $6 9 | | | | |
| Project Total | $0 0 | $111 3 | $111 3 | $107 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 3 | | 0 2 | | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| GS-12 Supervisor | 0 5 | $2 0 | |
| GS-09 Field Director | 1 5 | $4 1 | |
| GS-07 Crew Member | 0 1 | $2 0 | |
| GS-09 Draftsman | 0 2 | $0 5 | |
| GS-11 Records Mgr | 0 2 | $0 5 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

**1993**



Project Number 93-006
Project Title Site Specific Archeological Restoration
Sub-Project
Agency NPS

FORM 3A SUB-PROJECT DETAIL

| | | | |
|---|---|---|---|
| **Travel** | Per Diem 2 6<br>Transportation 4 5 | | |
| **Contractual** | Film Processing 0 2<br>Report Duplication 0 1<br>Sample Processing 13 8 | * Curation 68 3<br>** Repatriaton 2 5 | (Large contracts, curation and sample processing assigned to NPS) |
| **Commodities** | (Film, videotape, bags, tags, ammunition, sample jars, etc ) 1 0 | | |
| **Equipment** | Basic field equipment -- floatation work suits, 2-way radios, E P I R B s, safety emergency kits, weatherproof VHS camcorders, tents, shovels, sledge hammers, etc 1 2 | | |
| General Administration | 15% of personnel = 1 4<br>7% of contractual = 5 9 | | |

*Curation One-time cost for curation in perpetuity, estimate in accordance with standards in 36 CFR Part 79 (Curation of Federally-Owned and Administered Archeological Collections)

**Repatriation of human remains, grave goods or cultural patrimony in accordance with the Native American Graves Protaction and Repatriation Act (NAGPRA), includes cultural anthropological consulting contract, arrangements with recipient groups, etc

EXXON VALDEZ TRUSTEE COUNCIL

| Agency | Project Number | Project Title | Proposed 1-Jan-93 30-Sep-93 | | | |
|---|---|---|---|---|---|---|
| DNR | 93-006 | Site Specific Archeological Restoration | 86 2 | | | |

17 Jul 92

**1993**



FORM 1B
AGENCY SUMMARY

Project Description Site Specific Archeological Restoration

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 48 2 | $48 2 | $40 6 | | | | |
| Travel | | 8 5 | $8 5 | $8 5 | | | | |
| Contractual | | 14 5 | $14 5 | $14 5 | | | | |
| Commodities | | 3 9 | $3 9 | $3 9 | | | | |
| Equipment | | 2 9 | $2 9 | $2 9 | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $78 0 | $78 0 | $70 4 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | | 8 2 | $8 2 | $7 1 | | | | |
| Project Total | $0 0 | $86 2 | $86 2 | $77 5 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 8 | 0 8 | 0 6 | | | | |
| | | | | | Amounts are shown in thousands of dollars | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Archaeologist I | 5 | $20 0 | |
| Archaeologist II | 4 | $24 7 | Archaeologist II divided between 2 positions |
| Chief, H & A | 0 5 | $3 5 | State personnel structure and costs different from federal agencies |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

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Project Number 93-006
Project Title Site Specific Archeological Restoration
Sub-Project
Agency DNR

FORM 3A SUB-PROJECT DETAIL

| | | | |
|---|---|---|---|
| **Travel** | Per Diem 5 9<br>Transportation 2 6 | | Subtotal 8 5 |
| **Contractual** | Film Processing 0 3<br>Report Duplication 0 2<br>* Air Charter 4 5 | * Boat Charter 4 5<br><br>** Repatriaton 2 5 | Subtotal 14 5 |
| **Commodities** | (Film, videotape, bags, tags, ammunition, sample jars, etc ) 3 9 | | |
| **Equipment** | Basic field equipment -- floatation work suits, 2-way radios, E P I R B s, safety emergency kits, weatherproof VHS camcorders, tents, shovels, sledge hammers, etc 2 0 | | |
| General Administration | 15% of personnel = 7 2<br>7% of contractual = 1 0 | | |

*Curation One-time cost for curation in perpetuity, estimate in accordance with standards in 36 CFR Part 79 (Curation of Federally-Owned and Administered Archeological Collections)

**Repatriation of human remains, grave goods or cultural patrimony in accordance with the Native American Graves Protaction and Repatriation Act (NAGPRA), includes cultural anthropological consulting contract, arrangements with recipient groups, etc

EXXON VALDEZ TRUSTEE COUNCIL

| Agency | Project Number | Project Title | Proposed 1-Jan-93 30-Sep-93 | | | |
|---|---|---|---|---|---|---|
| USFS | 93-006 | Site Specific Archeological Restoration | 27 3 | | | |

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**1993**



FORM 1B
AGENCY SUMMARY

Project Description Site Specific Archeological Restoration

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 10 6 | $10 6 | $9 9 | | | | |
| Travel | | 7 2 | $7 2 | $7 2 | | | | |
| Contractual | | 5 3 | $5 3 | $5 3 | | | | |
| Commodities | | 1 | $1 0 | $1 0 | | | | |
| Equipment | | 1 2 | $1 2 | $1 2 | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | | $25 3 | $24 6 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | | 2 | $2 0 | $1 9 | | | | |
| Project Total | $0 0 | $27 3 | $27 3 | $26 5 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 3 | 0 3 | 0 3 | | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| GS-12 Supervisor | 0 7 | $2 9 | |
| GS-09 Field Director | 1 6 | $4 4 | |
| GS-07 Crew Member | 1 1 | $2 4 | |
| GS-09 Draftsman | 0 2 | $0 4 | |
| Gs-11 Records Mgr | 0 2 | $0 5 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

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Project Number 93-006
Project Title Site Specific Archeological Restoration
Sub-Project
Agency USFS

FORM 3A SUB-PROJECT DETAIL

1993

| | |
|---|---|
| **Travel** | Per Diem 2 0<br>Transportation 5 2 |
| **Contractual** | Film Processing 0 2<br>Report Duplication 0 1<br>**Repatriation 5 0 |
| **Commodities** | (Film, videotape, bags, tags, ammunition, sample jars, etc ) 0 8 |
| **Equipment** | Basic field equipment -- floatation work suits, 2-way radios, E P I R B s, safety emergency kits, weatherproof VHS camcorders, tents, shovels, sledge hammers, etc 1 2 |
| General Administration | 15% of personnel = 1 6<br>7% of contractual = 0 4 |

**Repatriation of human remains, grave goods or cultural patrimony in accordance with the Native American Graves Protaction and Repatriation Act (NAGPRA), includes cultural anthropological consulting contract, arrangements with recipient groups, etc

EXXON VALDEZ TRUSTEE COUNCIL

| Agency | Project Number | Project Title | Proposed 1-Jan-93 30-Sep-93 | | | |
|---|---|---|---|---|---|---|
| USF&W | 93-006 | Site Specific Archeological Restoration | 33 9 | | | |

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**1993**



FORM 1B
AGENCY SUMMARY

Project Description Site Specific Archeological Restoration

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 14 9 | $14 9 | $12 7 | | | | |
| Travel | | 10 4 | $10 4 | $10 4 | | | | |
| Contractual | | 3 | $3 0 | $3 0 | | | | |
| Commodities | | 1 2 | $1 2 | $1 2 | | | | |
| Equipment | | 1 8 | $1 8 | $1 7 | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $31 3 | $31 3 | $29 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | | 2 6 | $2 6 | $2 1 | | | | |
| Project Total | $0 0 | $33 9 | $33 9 | $31 1 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 4 | | 0 4 | | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| GS-12 Supervisor | 0 9 | $4 0 | |
| GS-09 Field Director | 2 2 | $6 1 | |
| GS-07 Crew Member | 1 5 | $3 4 | |
| GS-09 Draftsman | 0 2 | $0 6 | |
| GS-11 Records Mgr | 0 2 | $0 8 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

Project Number 93-006
Project Title Site Specific Archeological Restoration
Sub-Project
Agency USF&W

FORM 3A SUB-PROJECT DETAIL

1993

| | |
|---|---|
| **Travel** | Per Diem 3 9<br>Transportation 6 5 |
| **Contractual** | Film Processing 0 3<br>Report Duplication 0 2 ** Repatriation 5 0 |
| **Commodities** | Film, videotape, bags, tags, ammunition, sample jars, etc 1 0 |
| **Equipment** | Basic field equipment -- floatation work suits, 2-way radios, E P I R B s, safety emergency kits, weatherproof VHS camcorders, tents, shovels, sledge hammers, etc 1 8 |
| General Administration | 15% of personnel = 2 2<br>7% of contractual = 0 4 |

** Repatriation of human remains, grave goods or cultural patrimony in accordance with the Native American Graves Protection and Repatriation Act (NAGPRA), includes cultural anthropolocial consulting contract, arrangements with recipient groups, etc

# *EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION*

**Project Number** 93-007

**Project Source**

**Project Title** Archaeological Site Stewardship Program

**Project Category** Management Action

**Project Type** Archaeology

**Lead Agency** U S Fish and Wildlife Service

**Cooperating Agencies** Alaska Department of Natural Resources, Office of History and Archaeology
U S Forest Service
National Park Service

**Project Term** Start Date 1 January 1993 Finish Date 15 January 1994

## INTRODUCTION

Background and Summary of Injury --The late prehistoric residents of the Prince William Sound, Kenai Peninsula, Kodiak Island and Alaska Peninsula areas oriented their subsistence activities to marine resources, and large numbers of archaeological sites occur along the coast in the area affected by the *Exxon Valdez* oil spill Due to tectonic activity in this region, some archaeological sites which were once n dry land now occur in the intertidal zone, and 25 or more sites were directly oiled or disturbed by eanup activities following the spill In addition to these direct effects on archaeological resources, the spill brought hundreds of people into the spill area for response and damage assessment thereby increasing public knowledge of the locations of archaeological sites Looting and vandalism of sites in the spill area has increased Vandalism of archaeological sites is often caused by individuals that are interested in artifacts but that are unaware of the damage caused by removing artifacts or disturbing the site Vandalism results in the irretrievable loss of information from damaged sites Vandalized sites cannot be returned to their original condition, and the most effective counter to vandalism is public education and increased oversight of the sites

Site stewardship is the recruitment, training, coordination and maintenance of a corps of local interested citizens to watch over nearby archaeological sites Site stewardship programs in Arizona, Arkansas and Texas have successfully reduced the incidence of vandalism of archaeological sites A stewardship program for the area affected by the *Exxon Valdez* oil spill was initiated in 1992, and this proposed project would continue that program

Location --In 1993, stewardship programs will be instituted using residents of Kodiak, Homer and Chenega In subsequent years, the program will expand to include other communities in the spill area

**HAT**

Goal --The goal of the Program is to reduce or eliminate vandalism at archaeological sites in the area affected by the *Exxon Valdez* oil spill

Objectives --

1 Recruit and train local residents to protect the archaeological resources in their areas

2 Obtain agreements with private landowners and agencies with land management responsibilities to participate in the stewardship program

**WHY**

Benefit to Injured Resources/Services --This proposed project will benefit archaeological sites by preventing their destruction through vandalism Archaeological sites in the area affected by the *Exxon Valdez* oil spill that were not directly oiled are nevertheless subject to continuing injury related to the spill due to increased public knowledge of the sites This project will benefit an injured resource by preventing further injury

Relationship to Restoration Goals --This proposed project meets the Trustee Council goal of restoring the environment to its pre-spill condition through management action

**OW**

Methodology --The stewardship program is based on functioning programs in Arizona and Texas The program will be managed by the Alaska Department of Natural Resources, Office of History and Archaeology (SOHA) with assistance from the U S Fish and Wildlife Service, the U S Forest Service, and the National Park Service during the early phase of program development The SOHA will have ultimate management responsibility for the stewardship program The SOHA will employ a State Coordinator to coordinate and administer the network of site stewards and steward coordinators The U S Fish and Wildlife Service, U S Forest Service and National Park Service will assist in the implementation of the program These federal agencies will also cooperate with the SOHA in continued operation of the program

Agencies with land management responsibilities in the spill area, including the U S Forest Service, National Park Service and U S Fish and Wildlife Service, and private landowners interested in participating in the stewardship program will enter into agreements with the SOHA The program will employ volunteers to watch assigned sites and report any changes or disturbances to the sites A local coordinator, also a volunteer, will guide day to day efforts and recruit and train new stewards Local coordinators will also make recommendations on future actions to land owners and the State Coordinator The State Coordinator will provide overall direction for the program Land owners and managers will identify sites for monitoring, help select and train stewards, and provide technical advice and assistance

Coordination with Other Efforts --The stewardship program will continue the current stewardship project effort begun in 1992 This program will complement the archaeological site monitoring proposal submitted by the National Park Service The stewards, with their intensive level of site observations, will be a valuable supplement to patrols by monitoring teams The monitoring teams will in turn provide

professional and legal expertise to act on damage reports from stewards The stewardship program will also complement the Public Education proposal submitted by the U S Forest Service Stewards could assist in public education outreach program by giving lectures and talking in classrooms in their local areas

**ENVIRONMENTAL COMPLIANCE** This proposed project is a non-intrusive study that appears to qualify for a categorical exclusion from the requirements of the National Environmental Policy Act

**WHEN**

| | |
|---|---|
| Prepare/print 1993 training materials/handbooks | Jan-February 1993 |
| Develop agreements with landowners and agencies | Winter 1993 |
| Train stewards | March 1993 |
| Stewards in place | Spring/Summer 1993 |
| Compile reports from stewards | Fall 1993 |
| Submit Status Report | January 1994 |

In subsequent years, additional areas within the spill area will be included in the program Training materials will be modified as needed

Project Description: Archaeological Site Stewardship Program This project will organize a network of volunteers to patrol selected archaeological sites within the area affected by the Exxon Valdez Oil Spill in an effort to reduce vandalism

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 94 0 | 94 0 | 60 4 | | | | |
| Travel | | 24 5 | 24 5 | 18 0 | | | | |
| Contractual | | 34 0 | 34 0 | 12 5 | | | | |
| Commodities | | 20 5 | 20 5 | 13 6 | | | | |
| Equipment | | 6 2 | 6 2 | 0 0 | | | | |
| Capital Outlay | | | 0 0 | 0 0 | | | | |
| Sub-total | 0 0 | 179 2 | 179 2 | 104 5 | 0 0 | 0 0 | 0 0 | 0 0 |
| General Administration | | 14 1 | 14 1 | 8 2 | | | | |
| Project Total | 0 0 | 193 3 | 193 3 | 112 7 | 160 5 | 160 5 | 160 5 | 0 0 |
| Full-time Equivalents (FTE) | | 2 1 | 2 1 | 1 7 | 1 7 | 1 7 | 1 7 | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Program Manager GS12 (FWS) | 1 2 | 6,000 | |
| Archaeologist GS9 (FWS) | 5 0 | 10,900 | |
| Archaeologist GS11 (FS) | 1 2 | 2640 | |
| Archaeologist GS9 (FS) | 5 0 | 13,630 | |
| Education Specialist GS7 (FWS) | 2 0 | 4,500 | |
| Archaeologist I (State) | 3 0 | 15,000 | |
| Archaeologist II (State) | 6 0 | 37,000 | |
| Archaeologist GS9 (NPS) | 2 0 | 4,360 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

| | |
|---|---|
| Travel | Travel money will be used to send agency archaeologists to target areas to train stewards and perform follow up evaluations Travel will also be needed to establish the program in new areas, organizing trips, public meetings, etc |
| Contractual | Printing and producing training materials, film developing, plane & boat charters |
| Commodities | Office supplies, fuel, photographic supplies, videotapes ( see specific sub-projects for details) |
| Equipment | See specific sub-projects for details |

Project Description: Archaeological Site Stewardship Program Development of training materials for site stewardship program, training of stewards, and coordination with State Office of History & Archaeology to implement program

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 21 4 | 21 4 | 10 0 | 10 0 | 10 0 | 10 0 | |
| Travel | | 6 0 | 6 0 | 5 0 | 5 0 | 5 0 | 5 0 | |
| Contractual | | 5 0 | 5 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Commodities | | 2 6 | 2 6 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Equipment | | 2 2 | 2 2 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Sub-total | 0 0 | 37 2 | 37 2 | 15 0 | 15 0 | 15 0 | 15 0 | 0 0 |
| General Administration | | 2 5 | 2 5 | 1 5 | 1 5 | 1 5 | 1 5 | |
| Project Total | 0 0 | 39 7 | 39 7 | 16 5 | 16 5 | 16 5 | 16 5 | 0 0 |
| Full-time Equivalents (FTE) | | 0 65 | 0 65 | 0 5 | 0 5 | 0 5 | 0 5 | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Archaeologist GS9 | 5 | 10,900 | |
| Program Manager GS12 | 1 2 | 6,000 | |
| Education Specialist GS7 | 2 | 4,500 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

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| | |
|---|---|
| Project Number | 93-007 |
| Project Title | Archaeological Site Stewardship |
| Sub-Project | Training Materials & Coordination |
| Agency | US Fish & Wildlife Service |

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| Travel | Travel for training coordinators and stewards and for follow up visits to stewards |
| Contractual | Printing and reprinting of training materials, film developing |
| Commodities | Office supplies |
| Equipment | Photographic supplies, field packs and gear for stewards |

Project Description Archaeological Site Stewardship Program Develop a volunteer program to patrol sites

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 52 0 | 52 0 | 40 0 | 40 0 | 40 0 | 40 0 | |
| Travel | | 8 5 | 8 5 | 7 5 | 7 5 | 7 5 | 7 5 | |
| Contractual | | 33 5 | 33 5 | 10 0 | 10 0 | 10 0 | 10 0 | |
| Commodities | | 2 0 | 2 0 | 1 5 | 1 5 | 1 5 | 1 5 | |
| Equipment | | 4 0 | 4 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Sub-total | 0 0 | 100 0 | 100 0 | 59 0 | 59 0 | 59 0 | 59 0 | 0 0 |
| General Administration | | 8 5 | 8 5 | 6 0 | 6 0 | 6 0 | 6 0 | |
| Project Total | 0 0 | 108 5 | 108 5 | 65 0 | 65 0 | 65 0 | 65 0 | 0 0 |
| Full-time Equivalents (FTE) | | 0 75 | 0 75 | 0 5 | 0 5 | 0 5 | 0 75 | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Archaeologist II | 6 | 37,000 | |
| Archaeologist I | 2 3 | 11,500 | |
| Chief, history & archaeology | 0 5 | 3,500 | |

*FY 93 is a transiton year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

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| | |
|---|---|
| Project Number | 93-007 |
| Project Title | Archaeological Site Stewardship |
| Sub-Project | Coordinate Volunteer Stewards |
| Agency | AK Dept of Natural Resources |

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| Travel | For coordination and training of stewards and coordinators, Homer, Kodiak, Cordova, Seward travel and per diem |
| Contractual | Air charters (5K), space & phone (5K), relay radio services |
| Commodities | Office supplies |
| Equipment | Radios |

Project Description: Archaeological site stewardship program Training of stewards and coordination with Alaska State Office of History and Archaeology to implement program

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 16 3 | 16 3 | 16 0 | 16 0 | 16 0 | 16 0 | |
| Travel | | 6 0 | 6 0 | 1 5 | 1 5 | 1 5 | 1 5 | |
| Contractual | | 5 0 | 5 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Commodities | | 2 5 | 2 5 | 0 6 | 0 5 | 0 5 | 0 5 | |
| Equipment | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Sub-total | 0 0 | 29 8 | 29 8 | 18 1 | 18 0 | 18 0 | 18 0 | 0 0 |
| General Administration | | 2 4 | 2 4 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Project Total | 0 0 | 32 2 | 32 2 | 18 1 | 18 0 | 18 0 | 18 0 | 0 0 |
| Full-time Equivalents (FTE) | | 0 5 | 0 5 | 1 1 | 1 1 | 1 1 | 1 1 | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Archaeologist GS11 | 1 2 | 2,640 | |
| Archaeologist GS9 | 5 | 13,630 | |

*FY 93 is a transition year from the previously used oil fiscal year This new project also includes proposed funding for January and February, 1993

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| | |
|---|---|
| Project Number | 93-007 |
| Project Title | Archaeological Site Stewardship |
| Sub-Project | Coordination & Training |
| Agency | US Forest Service |

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| Travel | Travel for training coordinators and stewards and for follow up visits to stewards |
| Contractual | Air charter, photo processing |
| Commodities | Office supplies |
| Equipment | |

Project Description: Archaeological Site Stewardship Program, training and coordination with Alaska State Office of History and Archaeology to implement program

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 4 4 | 4 4 | 4 5 | 4 5 | 4 5 | 4 5 | |
| Travel | | 4 0 | 4 0 | 4 0 | 4 0 | 4 0 | 4 0 | |
| Contractual | | 2 5 | 2 5 | 2 5 | 2 5 | 2 5 | 2 5 | |
| Commodities | | 1 5 | 1 5 | 1 5 | 1 5 | 1 5 | 1 5 | |
| Equipment | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | |
| Sub-total | 0 0 | 12 4 | 12 4 | 12 5 | 12 5 | 12 5 | 12 5 | 0 0 |
| General Administration | | 0 7 | 0 7 | 0 7 | 0 7 | 0 7 | 0 7 | |
| Project Total | 0 0 | 13 1 | 13 1 | 13 2 | 13 2 | 13 2 | 13 2 | 0 0 |
| Full-time Equivalents (FTE) | | 0 2 | 0 2 | | | | | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Archaeologist GS9 | 2 | 4,360 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

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1993



| | |
|---|---|
| Project Number | 93-007 |
| Project Title | Archaeological Site Stewardship |
| Sub-Project | Coordination & Training |
| Agency | National Park Service |

FORM 3A SUB-PROJECT DETAIL

Travel travel for training coordinators and stewards and for follow up visits to stewards, and per diem

Contractual film development, air charter

Commodities Office supplies

Equipment

# *EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION*

**Project Number** 93-008

**Project Source.**

**Project Title** Archaeological Site Patrol and Monitoring

**Project Category** Restoration Management Actions

**Project Type** Archaeology/Cultural Resources

**Lead Agency** National Park Service

**Cooperating Agencies** US Fish and Wildlife Service, US Forest Service, State of Alaska

**Project Term Start Date** 5/1/93 (day/month/year) **Finish Date.** 3/1/97 (day/month/year)

## INTRODUCTION

The Exxon Valdez oil spill and associated cleanups have resulted in an increased public knowledge of archaeological resources in the oil spill area The greater visibility of site locations brought on by oil spill activities has resulted in higher incidence rates of looting and vandalism to these resources (An Evaluation of Archaeological Injury Documentation, Exxon Valdez Oil Spill, NPS, DNR)

The purpose of this project is to ameliorate the impact of these higher rates of archaeological looting and vandalism This will be accomplished by utilizing agency archaeologists and resource protection personnel who will conduct public contact patrols and archaeological site monitoring along the coastlines in the Exxon Valdez oil spill area The agency teams will work in their respective areas making contact with the public and informing them of the values of protecting archaeological sites and the federal and state statutes that require this protection The teams will also monitor selected segments of the coastline for signs of looting or vandalism that may require additional management or law enforcement action

**Project Number:** 93-008

**WHAT**

The goal of this project is to reduce or eliminate archaeological site looting and vandalism through the following measures

1 Create greater public awareness of the value of archaeological resources and the laws protecting them

2 Create an agency presence and demonstrate agency interest in archaeological resources to discourage and prevent future vandalism in the oil spill area

3 Identify areas most vulnerable to looting and vandalism that will require further law enforcement action

4 Track the geographical and temporal variation in the incidence of looting and vandalism in order to take the appropriate protective measures

5 Increase the efficiency and effectiveness of archaeological resource protection among the involved agencies

**WHY**

Before the oil spill, archaeological resources were, practically speaking, protected by their unknown locations Unfortunately, it is impossible to reverse the expanded knowledge of these resources gained by the public as a direct result of the spill and cleanup activities Therefore, it is necessary to offset this knowledge of the resource with a positive presence by the agencies and additional effort to spread the message that these resources are protected by state and federal laws

**HOW**

The agency teams will consist minimally of an archaeologist and a resource protection specialist The interdisciplinary team approach is essential to the success of this project The teams will make active contact with the public that utilizes the target coastal zones and inform them of the values of protecting archaeological sites and the federal and state laws that require this protection They will also monitor selected segments of the coastline for signs of looting or vandalism that may require further management or law enforcement action and refer the information to the appropriate agency for action Site patrol and monitoring will give priority to known problem areas where looting has already occurred or where sites are known to be at risk as identified in the archaeological resource damage assessment study, recently completed

Standard resource protection and archaeological data collection practices will be employed Successful programs for cooperative multi-agency patrol and monitoring projects have been developed in the American Southwest, and the National Park Service (NPS) has an incipient program in place in Alaska Detailed field notes, photographs or video tapes, and all patrol reports, including a log of all public contacts, will be kept by the field teams

The bulk of the project funding for this component will be distributed among the participating agencies for field personnel salaries, for supplies, and for flight time, fuel, etc, to supplement existing site patrol and monitoring efforts, or establish them where necessary Augmenting existing agency efforts is the most cost-effective approach The three federal agencies and the state already have existing patrol capabilities in the oil spill zone The purpose here is to expand those capabilities to cover the affected archaeological sites In addition, the NPS has used ARPA law enforcement funds from Washington for the last two years to expand the patrolling capabilities of several seasonal rangers in Katmai National Park to cover archaeological resources

The technical lead for this component will be the National Park Service which has expertise in this area, including a well-developed archaeological resource protection and training program An archaeologist with a law enforcement commission will act as project coordinator and the regional law enforcement specialist will act as a technical advisor to the program Both will serve as trainers for field personnel

The overall management of the project will be done by the project coordinator in consultation with the project technical advisor and the agencies The project coordinator will ensure that there is uniformity among the agencies in carrying out the project, will act as the liaison among agencies, and will recommend the most efficient use of project resources

The project coordinator will act as the project information officer and maintain all project records, including a copy of all field notes, patrol reports, photographs, and other records or data collected by field personnel The project coordinator will also consolidate and analyze this information to produce an annual report for the project, and make recommendations for future efforts Data will be maintained in the files of the project coordinator and will be made available to all participating agencies

Uniform training for field personnel is essential to the success of this project, and will be conducted by the project coordinator and the technical advisor with input from the agencies A nationally

recognized expert on archaeological resource protection will be brought from Duluth, Minnesota for the training session All field personnel must attend the project training, to be held at the beginning of each field season, before they will be allowed to participate in the project Training will consist of orientation to the project, archaeological resource protection training, resource familiarization, and public education and contact techniques

To ensure uniformity and comparability of observations and data collection, the project coordinator and the technical advisor will periodically review individual agency operations, including field evaluations Issues of safety and logistics will be handled by individual agencies

A plan of operations must be filed by each participating agency for each year An annual report will be required from each agency, including a status report on the targeted sites The project coordinator will prepare an annual report for the entire project which compiles and analyzes the data collected by each agency for that year, and make recommendations for the following year's effort

This project will be coordinated with the archaeological site stewardship program currently administered by the US Fish and Wildlife Service, and with any other archaeological restoration projects approved by the Trustees

**ENVIRONMENTAL COMPLIANCE**

The proposed project is a categorical exclusion from the National Environmental Policy Act

**WHEN**

The duration of the full project will be three to five years, depending on the level of documented site damage

| | |
|---|---|
| 5/1/93 | Agency Operating Plans for 1992 Field Season Due |
| 6/1/93-6/5/93 | Field Personnel Training in Anchorage |
| 6/8/93-8/27/93 | Field Work |
| 11/16/93 | Agency Annual Reports and Copies of Field Data Due |
| 3/1/94 | Project Annual Report Due and Distributed to Agencies and Trustees |

Similar schedules would be implemented for following years

Project Description This project will reduce or eliminate archaeological site looting and vandalism by using agency archeologists and resource protection personnel to conduct public contact patrols and archeological site monitoring in the Exxon Valdez oil spill area

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 118 9 | $118 9 | $118 9 | $118 9 | $118 9 | $118 9 | |
| Travel | | 17 6 | $17 6 | $17 6 | $17 6 | $17 6 | $17 6 | |
| Contractual | | 117 5 | $117 5 | $117 5 | $117 5 | $117 5 | $117 5 | |
| Commodities | | 22 | $22 0 | $22 0 | $22 0 | $22 0 | $22 0 | |
| Equipment | | | $0 0 | | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $276 0 | $276 0 | $276 0 | $276 0 | $276 0 | $276 0 | $0 0 |
| General Administration | | 19 8 | $19 8 | $19 8 | $19 8 | $19 8 | $19 8 | |
| Project Total | $0 0 | $295 8 | $295 8 | $295 8 | $295 8 | $295 8 | $295 8 | $0 0 |
| Full-time Equivalents (FTE) | | 2 83 | 2 83 | 2 83 | 2 83 | 2 83 | 2 83 | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| | Position | Months Budgeted | Cost | Comment |
|---|---|---|---|---|
| 7 | GS 7 Field Archeologists and Resource Protection Specialists (Federal) | 3 | $51 8 | |
| 3 | Field Archeologists and Resource Protection Personnel (State) | 3 | $48 3 | |
| 1 | GS 11 Archeologist/Project Coordinator (Federal) | 3 | $14 0 | |
| 1 | GS 12 Law Enforcement Ranger (Federal) | 1 | $4 8 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993



Project Number 93-008
Project Title Archeological Site Patrol and Monitoring
Agency National Park Service

FORM 2A PROJECT DETAIL

| | | |
|---|---|---|
| **Travel** (Airfare and Per Diem) | One Person round trip Duluth MN to Anchorage 3 days to train field personnel | $1 40 |
| | Two persons 2 round trips to each of Kodiak, Seward Homer and Cordova/Valdez 3 days each (Project coordination and quality control field checks) | $7 |
| | Eight people round trip (2 each from Kodiak Seward Homer Cordova/Valdez) to Anchorage 3 days (to attend project training) | $9 30 |
| Subtotal, Travel | | $17 70 |
| **Contractual** | Film processing | $2 00 |
| | Charter aircraft (460 hours @ $250/hour) | $115 00 |
| | Martin McAllister professional fee (for training) | $0 70 |
| | Subtotal, Contractual | $117 70 |
| **Commodities** | Film and videotapes | $1 50 |
| | Miscellaneous office supplies etc | $0 50 |
| | Marine fuel (for agency vessels) | $19 80 |
| | Subtotal, Commodities | $21 80 |
| **Equipment** | | |
| | Subtotal, Equipment | $0 |
| **General Administration** | | |
| | Subtotal, General Administration | $19 80 |
| | Total, Agency Site Patrol and Monitoring | $295 80 |

17 Jul 92



Project Number 93-008
Project Title Archeological Site Patrol and Monitoring
Agency National Park Service

FORM 2B
PROJECT
DETAIL

Project Description This project will reduce or eliminate archeological site looting and vandalism by using agency archeologists and resource protection personnel to conduct public contact patrols and archaeological site monitoring in the Exxon Valdez oil spill area

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 41 | $41 0 | $41 0 | $41 0 | $41 0 | $41 0 | |
| Travel | | 10 7 | $10 7 | $10 7 | $10 7 | $10 7 | $10 7 | |
| Contractual | | 29 9 | $29 9 | $29 9 | $29 9 | $29 9 | $29 9 | |
| Commodities | | 5 5 | $5 5 | $5 5 | $5 5 | $5 5 | $5 5 | |
| Equipment | | | $0 0 | | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $87 1 | $87 1 | $87 1 | $87 1 | $87 1 | $87 1 | $0 0 |
| General Administration | | 6 1 | $6 1 | $6 1 | $6 1 | $6 1 | $6 1 | |
| Project Total | $0 0 | $93 2 | $93 2 | $93 2 | $93 2 | $93 2 | $93 2 | $0 0 |
| Full-time Equivalents (FTE) | | 1 08 | 1 08 | 1 08 | 1 08 | 1 08 | 1 08 | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| | Position | Months Budgeted | Cost |
|---|---|---|---|
| 3 | GS 7 Field Archeologists and Resource Protection Personnel | 3 | $22 2 |
| 1 | GS 11 Archeologist | 3 | $14 0 |
| 1 | GS 12 Law Enforcement Ranger | 1 | $4 8 |

Comment Additional GS 7 is to assist project director

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

Project Number 93-008
Project Title Archeological Site Patrol and Monitoring
Sub-Project
Agency National Park Service

FORM 3A SUB-PROJECT DETAIL

1993

| | | | |
|---|---|---|---|
| **Travel** | (Airfare and Per Diem) | 1 person round trip Duluth Anchorage plus perdiem (3 days) to Train field personnel | $1 40 |
| | 2 persons 2 round trips each to Kodiak Seward homer and Cordova/Valdez (Project coordination and quality control field checks) | | $7 |
| | Travel to Anchorage for field personnel to attend training | | $2 30 |
| | Subtotal | | $10 70 |
| **Contractual** | Fillm processing | | $0 50 |
| | Charter Aircraft (115 hours @ 250/hour) | | $28 70 |
| | Martin McAllister professional fee (trainer) | | $0 70 |
| | Subtotal | | $29 90 |
| **Commodities** | Film and videotapes | | $0 40 |
| | Miscellaneous office supplies | | $0 10 |
| | Marine fuel (for agency vessels) | | $4 90 |
| | Subtotal | | $5 40 |
| **Equipment** | | | $0 |
| **General Administration** | | | $6 10 |

Project Description This project will reduce or eliminate archeological site looting and vandalism by using agency archeologists and resource protection personnel to conduct public contact patrols and archeological site monitoring in the Exxon Valdez oil spill area

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 48 3 | $48 3 | $48 3 | $48 3 | $48 3 | $48 3 | |
| Travel | | 2 3 | $2 3 | $2 3 | $2 3 | $2 3 | $2 3 | |
| Contractual | | 29 2 | $29 2 | $5 5 | $5 5 | $5 5 | $5 5 | |
| Commodities | | 5 5 | $5 5 | | | | | |
| Equipment | | | $0 0 | | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $85 3 | $85 3 | $56 1 | $56 1 | $56 1 | $56 1 | $0 0 |
| General Administration | | 9 3 | $9 3 | $9 3 | $9 3 | $9 3 | $9 3 | |
| Project Total | $0 0 | $94 6 | $94 6 | $65 4 | $65 4 | $65 4 | $65 4 | $0 0 |
| Full-time Equivalents (FTE) | | 0 75 | 0 75 | 0 75 | 0 75 | 0 75 | 0 75 | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Archeologist II | 2 9 | $18 0 | |
| Archeologist I | 3 | $15 0 | Difference between State costs and USFWS and USFS costs are |
| Park Ranger II | 3 | $13 5 | due to higher grades and personnel costs for State |
| Chief,Office of History and Archeology | 0 25 | $1 8 | |
| Total | | $48 3 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

Project Number 93-008
Project Title Archeological Site Patrol and Monitoring
Sub-Project
Agency State of Alaska (DNR)

FORM 3A SUB-PROJECT DETAIL

1993

| | | |
|---|---|---|
| **Travel** | (Airfare and Perdiem) | |
| | Travel to Anchorage for field personnel to attend training | $2 30 |
| **Contractual** | | |
| | Film processing | $0 50 |
| | Charter Aircraft (115 hours @ $250/hour) | $28 70 |
| | Subtotal | $29 20 |
| **Commodities** | Film and videotapes | $0 40 |
| | Miscellaneous office supplies | $0 10 |
| | Marine fuel (for agency vessels) | $4 90 |
| | Subtotals | $5 40 |
| **Equipment** | | |
| **General Administration** | | $9 30 |

Project Description This project will reduce or eliminate archeological site looting and vandalism by using agency archeologists and resource protection personnel to conduct public contact patrols and archeological site monitoring in the Exxon Valdez oil spill area

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 14 8 | $14 8 | $14 8 | $14 8 | $14 8 | $14 8 | |
| Travel | | 2 3 | $2 3 | $2 3 | $2 3 | $2 3 | $2 3 | |
| Contractual | | 29 2 | $29 2 | $29 2 | $29 2 | $29 2 | $29 2 | |
| Commodities | | 5 5 | $5 5 | $5 5 | $5 5 | $5 5 | $5 5 | |
| Equipment | | | $0 0 | | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $51 8 | $51 8 | $51 8 | $51 8 | $51 8 | $51 8 | $0 0 |
| General Administration | | 2 2 | $2 2 | $2 2 | $2 2 | $2 2 | $2 2 | |
| Project Total | $0 0 | $54 0 | $54 0 | $54 0 | $54 0 | $54 0 | $54 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 5 | 0 5 | 0 5 | 0 5 | 0 5 | 0 5 | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| 2 GS-7 Field Archeologists and Resource Protection Personnel | 3 | $14 8 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

Project Number 93-008
Project Title Archeological Site Patrol and Monitoring
Sub-Project
Agency US Forest Service

FORM 3A SUB-PROJECT DETAIL

1993

| | | |
|---|---|---|
| **Travel** | (Airfare and Per Diem) | |
| | Travel to Anchorage for field personnel to attend training | $2 3 |
| **Contractual** | | |
| | Film Processing | $0 5 |
| | Charter Aircraft (115 Hours @ $250/hour) | $28 7 |
| | Subtotal | $29 2 |
| **Commodities** | Film and Videotapes | $0 4 |
| | Miscellaneous Office Supplies | $0 1 |
| | Marine Fuel (for agency vessels) | $4 9 |
| | Subtotal | $5 4 |
| **Equipment** | | |
| **General Administration** | | $4 2 |

Project Description This project will reduce or eliminate archeological site looting and vandalism by using agency archeologists and resource protection personnel to conduct public contact patrols and archeological site monitoring in the Exxon Valdez oil spill area

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 14 8 | $14 8 | $14 8 | $14 8 | $14 8 | $14 8 | |
| Travel | | 2 3 | $2 3 | $2 3 | $2 3 | $2 3 | $2 3 | |
| Contractual | | 29 2 | $29 2 | $29 2 | $29 2 | $29 2 | $29 2 | |
| Commodities | | 5 5 | $5 5 | $5 5 | $5 5 | $5 5 | $5 5 | |
| Equipment | | | $0 0 | | | | | |
| Capital Outlay | | | $0 0 | | | | | |
| Sub-total | $0 0 | $51 8 | $51 8 | $51 8 | $51 8 | $51 8 | $51 8 | $0 0 |
| General Administration | | 2 2 | $2 2 | $2 2 | $2 2 | $2 2 | $2 2 | |
| Project Total | $0 0 | $54 0 | $54 0 | $54 0 | $54 0 | $54 0 | $54 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 5 | 0 5 | 0 5 | 0 5 | 0 5 | 0 5 | |
| | | | | | Amounts are shown in thousands of dollars | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| 2 GS-7 Field Archeologists and Resource Protection Personnel | 3 | $14 8 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

Project Number 93-008
Project Title Archeological Site Patrol and Monitoring
Sub-Project
Agency US Fish and Wildlife

FORM 3A SUB-PROJECT DETAIL

1993

| | | |
|---|---|---|
| **Travel** | (Airfare and Per Diem) | |
| | Travel to Anchorage for field personnel to attend training | $2 3 |
| **Contractual** | | |
| | Film Processing | $0 5 |
| | Charter Aircraft (115 Hours @ $250/hour) | $28 7 |
| | Subtotal | $29 2 |
| **Commodities** | Film and Videotapes | $0 4 |
| | Miscellaneous Office Supplies | $0 1 |
| | Marine Fuel (for agency vessels) | $4 9 |
| | Subtotal | $5 4 |
| **Equipment** | | |
| **General Administration** | | $4 2 |



Project Number 93-008
Project Title
Sub-Project Archeological Site Patrol and Monitoring
Agency US Fish and Wildlife Service

FORM 3B
SUB-
PROJECT
DETAIL

# EXXON VALDEZ OIL SPILL TRUSTEES

## I. TRANSMITTAL

## II. BASIC INFORMATION

Project Source

Project Number 93009

Project Title Public Information, Education and Interpretation

---

Project Category Restoration Management Actions

Project Type Education

Lead Agency USDA Forest Service, Chugach National Forest

Cooperating Agencies National Park Service, US Fish and WildlifeService and Alaska Department of Fish and Game

Project Term 5 yrs Start Date 1/1/93 (day/month/year) Finish Date 30/9/97 (day/month/year)

## III. INTRODUCTION

A Background on the Resource/Service

This project is to inform, educate and provide interpretive materials and experiences for communities, visitors, commercial users, recreationist in the oil spill area and Prince WilliamSound (PWS) and for South Central Alaskans about the Exxon Valdez OilSpill and resultant research and restoration projects

**B. Summary of Injury**

The oil spill area and PWS communities and commercial and recreational users of the oil spill area all suffered adverse impacts from the spill In the broader sense all Alaskans and even other Americans felt injured by the degradation of what they believed was one of the more pristine and beautiful areas of Alaska

### C. Location

The public information outreach will benefit all of Southcentral Alaska with an emphasis on the communities of Valdez, Whittier, Cordova, Seward, Homer, Kodiak, and the Municipality of Anchorage

## IV. WHAT

### A. Goal

1 To inform and educate the public on the effects and impacts of the Exxon Valdez oil spill, current research and restoration project activities

2 To provide to the public an accurate/balanced view of existing conditions in PWS

3 To interpret PWS and the Gulf of Alaska environment to the public to enhance their enjoyment and understanding of this area

4 To enhance eco-tourism recreation opportunities and experiences through interpretation of the natural resources and environment

### B. Objectives

1 Development of a family of brochures on the oil spill impacted areas - the focus of the brochures will be on how the different subject areas were or were not affected by oil spill, and on educating recreationists and other users of the oil spill areas about minimum impact use to avoid further damage to injured resources Subjects to be covered would include but not be limited to marine mammals, waterbirds, anadromous fish, plants, upland wildlife, intertidal life, cultural resources, history of PWS, upland birds, and recreational opportunities

2 The development and production of a family of videos on the oil spill impacted areas These will be short (5-10 minutes) videos that can be used in visitor centers, in kiosks, taken to schools, public meetings or can be sent off as stand alone entities or as a combined package to whomever has a need for this type of information

3 Develop an interpretive plan for the oil impacted areas and train and place interpreters on cruise and tour vessels

4 Develop education curriculum modules to be used in schools throughout Southcentral Alaska

5 Develop traveling exhibits on the oil spill and the impacted environment These would incorporate hands on activities, live video and interpretive materials These exhibits would be appropriate for kiosks, visitor centers or schools

## V. WHY

This project will provide to the public balanced and accurate information on the oil spill, injured and non-injured resources, and on restoration efforts This project would tie into the restoration team's need to provide the public with information

## VI. HOW

A public affairs specialist (PAS) will be hired by the Forest Service in FY 1993 as overall coordinator for the approved projects The PAS will report to the public affairs officer on the Chugach National Forest and be responsible for monitoring the progress of all projects and for their ultimate completion Projects may be accomplished by agency (both state and federal) specialists or by contract The project coordinator will also be responsible and accountable for all project budgets

Support services such as clerical help, purchasing, contracting and the execution of interagency agreements (if needed) will be provided by the Chugach National Forest Supervisor's Office

Close coordination with other agencies will be critical The project coordinator will need to work closely with other appropriate cooperating state and federal agencies to ensure their active involvement All of the projects will be accomplished through the efforts of a multi-agency team

## VII. ENVIRONMENTAL COMPLIANCE

These projects are categorically excluded (FSH 1909 15, paragraph 26 la, item #4)

## VIII. WHEN

| | Start | Complete |
|---|---|---|
| Brochures (3) | 10/92 | 9/93 |
| Video (1) | 1/93 | 9/94 |
| School Curriculum Development | 1/93 | 9/93 |
| (Pilot test curriculum in schools -- unfunded) | | |
| (Full Implementation -- unfunded) | | |

Project Description

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep 93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $29 0 | $40 0 | $69 0 | $16 0 | | | | |
| Travel | $5 0 | $5 0 | $10 0 | $3 0 | | | | |
| Contractual | $86 0 | $119 0 | $205 0 | $0 0 | | | | |
| Commodities | $1 0 | $1 0 | $2 0 | $1 0 | | | | |
| Equipment | $15 0 | $0 0 | $15 0 | $0 0 | | | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | | | | |
| Sub-total | $136 0 | $165 0 | $301 0 | $20 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $13 1 | $14 3 | $24 7 | $2 4 | | | | |
| Project Total | $149 1 | $179 3 | $325 7 | $22 4 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full time Equivalents (FTE) | 0 6 | 0 8 | 1 4 | 0 4 | | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| PROJECT MANAGER | 0 25 | $1 0 | |
| PAO SPECIALIST | 12 | $54 0 | |
| CONTRACTING OFFICER | 1 | $4 0 | |
| PURCHASING AGENT | 1 | $3 0 | |
| SUPPORT SERVICES | 3 | $7 0 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993



Project Number 93-009
Project Title PUB INFO, ED, INTERP - FEDERAL
Agency USDA FOREST SERVICE

FORM 2A PROJECT DETAIL

| | | |
|---|---|---|
| **Travel** | PAO | $10 0 |
| sub-tot | | $10 0 |
| **Contractual** | DEVELOPMENT AND PRINTING OF BROCHURES, 3 @ $30,000 | $90 0 |
| | CURRICULUM DEVELOPMENT | $80 0 |
| | VIDEO PRODUCTION, 1 @ $35,000 | $35 0 |
| sub-tot | | $205 0 |
| **Commodities** | OFFICE SUPPLIES, REPRODUCTION, MAIL AND FILM | $2 0 |
| sub-tot | | $2 0 |
| **Equipment** | MACINTOSH COMPUTER AND SOFTWARE | $15 0 |
| | | $0 0 |
| | | $0 0 |
| | | $0 0 |
| sub-tot | | $15 0 |
| sub GA | | $24 7 |
| sub 3A | | $69 0 |
| TOTAL | | $325 7 |

17 Jul 92

**1993**



Project Number 93-009
Project Title PUB INFO, ED, INTERP - FEDERAL
Agency USDA FOREST SERVICE

FORM 2B
SUB-
PROJECT
DETAIL

# *EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION*

**Project Number** 93-010

**Project Source**

**Project Title** Reduce Disturbance Near Murre Colonies Showing Indications of Injury from the *Exxon Valdez* Oil Spill

**Project Category** Management action

**Project Type** Birds

**Lead Agency** U S Fish and Wildlife Service

**Cooperating Agencies** None

**Project Term** **Start Date** 1 January 1993 **Finish Date** 30 September 1993

## INTRODUCTION

Background on the Resource/Service --Common and thick-billed murres were the species of higher vertebrates most frequently injured by the oil from the *Exxon Valdez* spill These diving seabirds have continued to demonstrate abnormal breeding behavior and low reproductive output at several sites since the spill Murres normally nest in dense aggregations, presumably an adaption which reduces the rate of predation of eggs and chicks Social behavior within aggregations apparently is important in stimulating the onset of laying and there is a tendency for laying within aggregations to be relatively synchronous urres often respond to abrupt, loud noises by panic flights from nesting cliffs They are especially prone to panic flights when they are not incubating an egg or brooding a chick If a small percentage of the murres in an aggregation have laid and a panic flight occurs, eggs tend to be abandoned temporarily In contrast, after a substantial proportion of birds have laid, incubating birds are more likely to remain with eggs even when non-breeders and pre-breeders fly In most locations, eggs left unattended are taken by avian predators (e g , gulls, ravens) If food is adequate and eggs are lost early in incubation, murres will relay about 14 days after eggs are lost Nevertheless, a lower proportion of chicks fledge from second eggs than from first The result of panic flights, especially when such flights occur during early incubation, is reduced productivity

Summary of Injury --Over 100,000 murres were killed by the oil, and counts of birds at colonies within the trajectory of the oil indicated reduced populations after the spill In the 3 years following the spill, remaining murres at colonies affected by the oil have initiated laying relatively late, if they laid at all, and reproductive output has remained lower than normal Avian predators have been responsible for much of the egg loss Murres in colonies where a high percentage of the individuals are failing to reproduce tend to be flighty at the slightest disturbance As indicated above, panic flights, especially early in incubation, tend to reduce productivity for the colony With reduced populations, it is important for remaining murres to produce recruits at a high enough rate to cause recovery Poor reproductive success following the spill has continued, and few young were produced during the breeding seasons of 1989-1991 to recruit to breeding populations in the future If this continues, recovery to former population levels is unlikely

location --The project will attempt to reduce disturbance at the main murre colonies where evidence of injury has been recorded These colonies are Ugaiushak Island and Puale Bay, located on the south side of the Alaska Peninsula near the downstream end of the spill trajectory, the Barren Islands, located near Homer between the Kenai Peninsula and Kodiak Island area, the Triplet Islands, located between Kodiak

_ J Afognak Island, and the Chiswell Islands, located near Seward This project will include education displays and efforts in Kodiak, Homer, Seward, and Chignik

**WHAT**

Goal --The purpose of this project is to facilitate the recovery of murre colonies affected by the *Exxon Valdez* oil spill by reducing disturbance during the breeding season

Objectives --

1 Educate people who use areas near the murre colonies affected by the *Exxon Valdez* oil spill about the need to avoid disturbance to birds

2 To enhance productivity of murres by reducing disturbance

**WHY**

Benefit to Injured Resources/Services --Murre colonies within the trajectory of the spill were injured initially by loss of breeding birds The lingering effect has been abnormal breeding behavior resulting in reduced reproductive success This may be the result of a breeding population composed almost entirely of young inexperienced birds which may not have been present in 1989 when the oil-related mortality occurred Reducing disturbance near breeding colonies during the breeding season should enhance productivity by diminishing the panic flight which leave eggs and chicks exposed to predators Reducing sturbance bouts also may accelerate the return to an earlier nesting phenology by reducing the proportion of pairs that are forced to relay lost eggs The timing of chick hatching is presumably timed to coincide with maximum food resources needed to successfully rear chicks A return to more normal timing would therefore favor higher reproductive output and foster restoration of populations to former levels

Relationship to Restoration Goals --There are few reasonable proactive approaches that will aid restoration of murres, but minimizing disturbance likely will result in increased hatching success of murre eggs Further, if eggs laid early are not lost, the phenology of breeding events should return to a more normal schedule, one adaptive for maximum survival of young

**HOW**

Methodology --The public education campaign would include development of a brochure, articles in community and industry newspapers and magazines (e g commercial fisherman), presentations to communities and industry groups, and automated slide shows at visitor contact centers at Homer, Kodiak, and Seward Recommendations would be provided on how users may conduct activities in a less disturbing a manner (e g, ask halibut charter operators to gaff fish rather than shooting them to eliminate the loud noise) The targeted audience would include tour boat and fishing charter operators from Seward and Homer, and commercial fisherman from villages in the vicinity of colonies (e g , Kodiak, Seldovia, Chignik, Seward) In addition, workshops for charter operators would be held, the Federal Aviation Agency would be contacted to try to get advisories out to pilots in these areas, and regular radio and television spots would be developed for use in selected communities Although existing acilities, communication networks, and ongoing programs would aid accomplishment of the objective, one person would be hired specifically to perform the duties associated with this project

ordination with Other Efforts --This effort will compliment existing interpretive programs, and provide an opportunity to build understanding an appreciation for marine resources An effort would be made to solicit aid from the National Park Service and Alaska Department of Fish and Game to disseminate information Another restoration project, monitoring would provide a basis for judging the effectiveness of this project to minimize disturbance Coordination with existing law enforcement programs will be a part of this project, but no new regulations are proposed initially Not only murres but other colonial seabirds would benefit from reduced disturbance

**ENVIRONMENTAL COMPLIANCE**

This is a non intrusive project which appears to qualify for categorical exemption under NEPA

**WHEN**

| | |
|---|---|
| Oct 1992 | Advertise for and hire a lead person |
| Nov -Dec 1992 | Plan specific strategies for project and coordinate with cooperators |
| Jan -Mar 1993 | Produce brochure, develop presentations, and schedule presentations |
| Apr -Aug 1993 | Distribute information, make presentations |
| Sept 1993 | Analyze program effectiveness, recommend modifications |

| Project Description | Reduce disturbance at murre colonies through public education This is a 3–year project designed to reduce disturbance at murre colonies affected by the Oil Spill It involves an education and public awareness effort in communities where charter operators and fishermen who operate near affected colonies live |
|---|---|

| Budget Category | Approved 01–Oct–92 28–Feb–93 | Proposed* 01–Mar–93 30–Sep–93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 35 0 | 35 0 | 45 0 | | | | |
| Travel | | 9 0 | 9 0 | 11 0 | | | | |
| Contractual | | 4 0 | 4 0 | 4 0 | | | | |
| Commodities | | 2 0 | 2 0 | 2 0 | | | | |
| Equipment | | 2 0 | 2 0 | 2 0 | | | | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | | | | |
| Sub–total | 0 0 | 52 0 | 52 0 | 64 0 | | 0 0 | 0 0 | 0 0 |
| General Administration | | 4 8 | 4 8 | 7 8 | | | | |
| Project Total | 0 0 | 56 8 | 56 8 | 71 8 | 71 8 | 0 0 | 0 0 | 0 0 |
| Full–time Equivalents (FTE) | | 1 1 | 1 1 | 1 1 | 1 1 | | | |
| | | | | | Amounts are shown in thousands of dollars | | | |

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Outdoor Recreation Planner GS11 | 2 0 | 7,000 | Would help plan and oversee |
| Park Ranger GS7 | 8 0 | 20,000 | Primary field person |
| Volunteer (SCA) | 3 0 | 3,000 | Assist Park Ranger |
| Wildlife Biologist GS12 | 1 0 | 4,000 | Coordinate all restoration projects |
| Program Manager | 1 2 | 6,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** The total shown inFY 94 to close out work started in FY 93 is $7 5

| | |
|---|---|
| Travel | Two trips each per year to Kodiak and other villages on the island, Seward, Seldovia, and Chignik |
| Contractual | Print a brochure to distribute to boaters and airplane (particularly helicopter) operators using the areas near the affected colonies |
| Commodities | Office supplies needed to produce public education material |
| Equipment | Automated slide projectors would be purchased for visitor centers at Homer and Seward |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-011

**Project Source**

**Project Title** Develop Harvest Guidelines to Aid Restoration of River Otters and Harlequin Ducks

**Project Category** Management Actions

**Project Type**

**Lead Agency** Alaska Department of Fish and Game

**Cooperating Agencies**

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**Project Term** **Start Date** 1/1/93 (day/month/year) **Finish Date** 30/9/93 (day/month/year)

**INTRODUCTION** River otters (*Lutra canadensis*) and harlequin ducks (*Histrionicus histrionicus*) occur throughout the area impacted by the *Exxon Valdez* oil spill Damage assessment studies of both species has documented injury and raised the possibility of long-term detrimental affects Legal harvest of these species is continuing This is a controllable source of mortality that should be applied as a restoration tool However, that application cannot occur until harvest guidelines are developed and implemented that fully utilize injury assessment information This project will develop those guidelines

Otters forage in intertidal and subtidal zones that were heavily contaminated with oil Analysis of bile and blood samples indicated hydrocarbons were accumulated and that toxic effects of oil are continuing Oiled mussels eaten by otter are likely one source of continuing contamination Home ranges of radio-collared animals were larger in oiled than nonoiled areas suggesting that oil contamination made it more difficult for them to find food Body lengths, body weights and diet diversity were all lower in oiled areas, further substantiating indications of food problems A population decline in the oiled area in 1991 was indicated by a high rate of latrine site abandonment (nearly 15%) as compared to nonoiled sites (less than 4%)

More than 2,000 sea duck carcasses were recovered after the spill, including more than 200 harlequins Harlequins use the intertidal and shallow subtidal zones most heavily affected by the spill They feed on invertebrates, such as mussels, which showed continuing evidence of hydrocarbon contamination Tissues from about 40% of harlequins sampled in the oiled area during 1989 and 1990 were contaminated with hydrocarbons, and about 33% of birds collected in the spill area were in poor body condition In 1991, surveys indicated a harlequin population decline and near total reproductive failure in oiled areas of PWS Preliminary results of 1992 surveys suggested continuing reproductive failure

## WHAT

Goal This project will recommend harvest guidelines to facilitate restoration of river otters and harlequin ducks in PWS

Objectives for river otters are to

1 Estimate number, composition and location of historical and current harvest
2 Recommend seasons and bag limits that will facilitate restoration

Objectives for harlequin ducks are to

1 Recommend seasons and bag limits that will facilitate restoration

## WHY

Manipulation of seasons and bag limits to aid recovery of river otter and harlequin duck populations is likely the only restoration action possible over the next several years Mortality from trapping and hunting could be reduced and recovery thereby accelerated However, it must be clear that the benefit ) injured species outweighs the loss of resource use opportunity for the public

Other restoration actions, such as transplants or protection and enhancement of habitat will not be effective in the short-term because both species likely suffer continued exposure to petroleum hydrocarbons through ingestion of contaminated food Moreover, it is possible that natural degradation of hydrocarbons in the environment over a long period of time is the only way to eliminate this food contamination

Work proposed by this project will supplement normal management activities of ADF&G Division of Wildlife Conservation It will allow formulation of harvest guidelines that consider restoration goals Normal management activities for river otters and harlequins include at least four weeks of staff time devoted to collecting and analyzing harvest data, considering regulation changes, and implementing any season and bag limit changes that are approved Those activities are supported by data entry services, travel funds, and facilities

## HOW

River Otters

The reliability of monitoring the use of latrine sites as an index to population trend will be evaluated Literature will be searched and experts will be contacted to obtain opinions If monitoring appears easonable, it will be proposed as a continuation project

Most harvest will be quantified by searching ADF&G furbearer sealing records Additional harvest by local subsistence users that was not reported will be estimated using results of household surveys conducted by ADF&G Subsistence Division during 1992-93 Funding for those surveys is not requested part of this proposal All available information will be summarized by year beginning in 1985

Harvest guidelines will be formulated by considering the restoration goal, population trend and harvest level The goal is to restore the oil spill area to its pre-spill condition Achieving it will require reversing an apparent downward population trend The role of harvest mortality as a limiting factor will be estimated and guidelines formulated to insure that harvest facilitates recovery

Harlequin Ducks

Harvest and population data will be considered and harvest guidelines developed The sport harvest data used will be very general in nature because specific information on harlequins in PWS has not been collected by management agencies Existing subsistence harvest information is also non-specific However, improved subsistence data is expected from household surveys that will be conducted by ADF&G Division of Subsistence during 1992-93 Population status information is expected from the harlequin duck restoration monitoring study (#93-033)

**ENVIRONMENTAL COMPLIANCE**

No environmental assessment is required for this project

**/HEN**

River Otter

| month/year | |
|---|---|
| 10/92 | Make recommendation concerning emergency order changing 1992/93 trapping season |
| 3/93 | Evaluate reliability of latrine site monitoring as an index to population trend |
| 8/93-9/93 | Summarize harvest, make recommendation concerning an emergency order changing 1993/94 trapping season |

Sea Ducks

| month/year | |
|---|---|
| 1/93 | Make recommendation on season and bag limit to Board of Game |

EXXON VALDEZ TRUSTEE COUNCIL

Project Description This project will recommend and implement harvest guidelines to facilitate restoration of river otters in PWS and sea ducks, emphasizing harlequins, in the entire spill area The river otter objectives are 1) estimate population trend, 2) estimate number, composition and location of historical and current harvest, 3) recommend seasons and bag limits that will facilitate restoration, and 4) implement regulation changes approved by the Alaska Board of Game Sea duck objectives are 1) develop a method of quantifying annual harvest, emphasizing harlequin ducks, 2) estimate harvest for the 1993/94 waterfowl hunting season, 3) recommend seasons and bag limits that will facilitate restoration, and 4) implement regulation changes approved

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $6 6 | $7 3 | $11 6 | $11 6 | $11 6 | $11 6 | $11 6 |
| Travel | $0 0 | $0 5 | $2 0 | $2 0 | $2 0 | $2 0 | $2 0 | $2 0 |
| Contractual | $0 0 | $2 0 | $6 3 | $6 3 | $6 3 | $6 3 | $6 3 | $6 3 |
| Commodities | $0 0 | $1 0 | $2 0 | $2 0 | $2 0 | $2 0 | $2 0 | $2 0 |
| Equipment | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $0 0 | $10 1 | $17 6 | $21 9 | $21 9 | $21 9 | $21 9 | $21 9 |
| General Administration | $0 0 | $1 1 | $1 5 | $2 2 | $2 2 | $2 2 | $2 2 | $2 2 |
| Project Total | $0 0 | $11 2 | $19 1 | $24 1 | $24 1 | $24 1 | $24 1 | $24 1 |
| Full-time Equivalents (FTE) | 0 0 | 0 1 | | | | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| WB II | $0 5 | $3 0 | ** There are no closeout expenses if this project is not |
| F&WT | $1 0 | $4 3 | funded in 1994 |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

**1993**

page of

Project Number 93-011
Project Title Develop Harvest Guidlines to Aid Restoration of River Otters and Harlequin Ducks
Agency ADF&G

FORM 2A PROJECT DETAIL

| | |
|---|---|
| **Travel** | Commercial airline, Anchorage - Cordova, per diem |
| **Contractual** | Phone and car rental |
| **Commodities** | Office and public information materials |
| **Equipment** | None |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** **93-012**

**Project Source**

**Project Title** Genetic Stock Identification of Kenai River Sockeye Salmon

**Project Category** Restoration Management Actions

**Project Type** Fish/Shellfish

**Lead Agency** Alaska Dept of Fish and Game

**Cooperating Agencies**

**Project Term** **Start Date** 1/3/92 **Finish Date** 9/30/95

**INTRODUCTION** Fishing time in the Upper Cook Inlet area was greatly reduced in 1989 due to the presence of oil from EVOS As a direct result, sockeye salmon (*Oncorhynchus nerka*) spawning in the Kenai River system exceeded optimal escapement goals by three times This overescapement resulted in a severe overproduction of sockeye salmon fry The overabundance of sockeye salmon juveniles depleted invertebrate prey populations to the point that widespread juvenile mortality occurred during the winter-spring rearing period Consequently, sockeye smolt outmigrations in the Kenai River have been severely reduced, and the number of adult sockeye salmon returning from the 1989 overescapement in the Kenai River system is expected to be exceptionally low Starting in 1993, a dramatic reduction, or complete elimination, of Kenai River sockeye salmon harvests may be necessary to ensure even minimally adequate escapements

Sockeye salmon harvested from the mixed-stock fishery of Cook Inlet include fish from the Kenai, Kasilof, and Susitna Rivers In order to effectively manage the harvest of EVOS-damaged stocks, Restoration Science Study R59 - Assessment of Genetic Stock Structure of Salmonids - was implemented This study uses Genetic Stock Identification (GSI) techniques to identify Kenai River stocks in mixed stock Cook Inlet fisheries Area managers will use this information to modify fishing areas and openings in order to facilitate the harvest of surplus Kasilof and Susitna River stocks while protecting the EVOS-damaged Kenai River stocks

Restoration of Kenai River sockeye stocks will benefit subsistence, sport, and commercial fishermen in coastal communities throughout Cook Inlet, from Homer north through Anchorage to Tyonek In 1992 nearly 10,000 families obtained subsistence permits to harvest salmon in UCI, most targeting Kenai River sockeye salmon The most recent statistics indicate that nearly 100,000 sport anglers fished the Kenai River for salmon

in 1990, spending $38 million in 1986 dollars Forty percent of those anglers were from out of state Of the 1,323 permits licensed to commercial fish in UCI, 80% are fished by state residents with the remaining predominately from Pacific Coast states Average ex-vessel value (1987-1991) of the UCI commercial salmon harvest was $ 67 8 million

**WHAT** We will continue to develop a comprehensive genetic database of sockeye salmon stocks in Cook Inlet In 1992 we began collecting baseline genetic data from 28 subpopulations from the Kenai, Kasilof, and Susitna Rivers Beginning in 1993, samples from the Cook Inlet commercial harvest will be analyzed to estimate the composition of the fisheries This information will enable area managers to identify Kenai River fish occurring in the mixed-stock commercial fishery and thus harvest surplus stocks of sockeye salmon while providing protection to EVOS-damaged stocks destined for the Kenai River The specific objectives are to

1 Refine and expand the allozyme database to include all significant spawning stocks contributing to mixed-stock harvests of sockeye salmon in Cook Inlet Initiate the development of DNA marker detection in sockeye salmon to test for expanded resolving power

2 Obtain genetic data each week from samplings of the various mixed-stock fisheries occurring in 1993 - 1995

3 Use Genetic Stock Identification (GSI) algorithms to estimate the proportion of Kenai River stocks in mixed stock fisheries so that managers may modify area and time of harvest in order to protect these damaged stocks while targeting surplus Kasilof River and Susitna River stocks Estimates will be provided within 48 hours post-fishery

**WHY** Attempts to use stock identification to manage harvests of Cook Inlet sockeye salmon in the past have relied on scale growth patterns However, the accuracy of the scale technique alone has not been reliable, and it is insufficient to permit the in-season protection of the EVOS-damaged Kenai River stocks GSI techniques rely on genetic variation to discriminate between populations of organisms This method has recently been applied as an in-season fisheries management tool, and it has proven to be extremely effective for allocating and adjusting the harvest of fish stocks intercepted in mixed-stock fisheries such as those that occur in Cook Inlet Once a data base has been established, GSI techniques should provide a mechanism for in-season management on a stock-specific basis This will allow managers to control the harvest of Kenai River sockeye salmon and facilitate their recovery

**HOW** A comprehensive baseline genetic database will be developed for all sockeye salmon stocks contributing to Cook Inlet fisheries Additional sockeye salmon will be collected from approximately 20 baseline subpopulations each year (1993-1995) Sites will be chosen to supplement those being collected during the 1992 field season

Mixed stock fishery samples will be collected from every drift net fishery occurring during the July fisheries (1993-1995) Muscle, liver, heart, and eye tissue will taken from individual fish and examined by protein electrophoresis (allozyme analysis) for discriminating gene markers Genotypic and allelic frequency estimates will be calculated from allozyme electrophoretic data for each baseline and mixed-stock sample at every gene locus examined and will be used to identify discrete spawning populations Stock components of mixed fishery samples will be estimated using a conditional maximum likelihood algorithm Fishery composition estimates will be available within 48 hours following the fishery so that management decisions can be based on the actual composition of the fisheries

We will also screen representative individuals for DNA-level markers Total genomic DNA will be extracted and amplified through PCR (polymerase chain reaction) techniques utilizing various mitochondrial and nuclear primers Restriction analyses as well as sequencing studies will be performed Maximum likelihood simulation studies will be performed to test the additional resolution that could be provided by the DNA-level data DNA data will be collected from the fishery samples as scientifically and logistically feasible

**ENVIRONMENTAL COMPLIANCE** Collecting permits will be obtained as required

**WHEN**

| | |
|---|---|
| Baseline & Mixture sample collections/coordination with project R53 | June-Sept 1992 |
| Laboratory analyses of baseline & model mixtures | July-Dec 1992 |
| Laboratory analysis of baseline populations & annual report | Jan -Apr 1993 |
| Laboratory analyses of mixtures, numerical analyses of stock structure, modelling for 1993 mixture analyses | July-Sept 1993 |
| Baseline analyses, in-season analyses, annual report | Oct 93 - Sept 94 |
| Baseline analyses, in-season analyses, final report | Oct 94 - Sept 95 |

Project Description This project targets restoration of the EVOS-damaged Kenai River sockeye stocks by using stock identification techniques to protect damaged stocks from interception in commercial fisheries Starting in 1992 we will collect baseline genetic data from 28 subpopulations from the Kenai, Kasilof, and Susitna Rivers Samples from the Cook Inlet commercial harvest will be analyzed and reduced to stock components using these data and GSI techniques starting in 1993 Area managers will use this information to modify fishing areas and openings in order to facilitate harvest of the surplus Kasilof River and Susitna stocks while protecting the depleted Kenai River stocks

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $73 5 | $149 10 | $222 6 | $240 0 | $252 0 | | | |
| Travel | $2 5 | $12 00 | $14 5 | $14 0 | $15 0 | | | |
| Contractual | $3 5 | $30 00 | $33 5 | $40 0 | $42 0 | | | |
| Commodities | $14 8 | $45 00 | $59 8 | $55 0 | $58 0 | | | |
| Equipment | $0 0 | $40 00 | $40 0 | $20 0 | $10 0 | | | |
| Capital Outlay | $0 0 | $0 00 | $0 0 | $0 0 | $0 0 | | | |
| Sub-total | $94 3 | $276 1 | $370 4 | $369 0 | $377 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $11 3 | $24 50 | $35 8 | $38 8 | $40 7 | | | |
| Project Total | $105 6 | $300 6 | $406 2 | $407 8 | $417 7 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | 2 1 | 3 0 | | 4 8 | 5 1 | | | |
| | | | | | Amounts are shown in thousands of dollars | | | |

| Budget Year Proposed Personnel Position | Months Budgeted | Cost |
|---|---|---|
| 1 Biom I | 7 0 | $35 0 |
| 1 FBII | 7 0 | $32 0 |
| 1 FWTIII | 7 0 | $24 0 |
| 2 FWTII | 10 0 | $30 0 |
| 1 A/P IV | 1 3 | $6 7 |
| 1 A/P II | 0 8 | $3 1 |
| 1 P/S II | 0 8 | $3 3 |
| 1 Program Manager | 2 0 | $15 0 |

Comment

** If not funded in FY 94, $169 0K will be needed for removal of field equipment, data analysis and report preparation

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

1993



Project Number 93-012
Project Title Genetic Stock Identification of Kenai River Sockeye Salmon
Agency ADF&G

FORM 2A PROJECT DETAIL

| | |
|---|---|
| **Travel** | Field travel in Cook Inlet area and administrative travel to Soldotna and Juneau |
| **Contractual** | Long distance phone, lab equipment maintenance, truck rental, liquid nitrogen and air freight |
| **Commodities** | Biochemicals, sampling supplies, office supplies, and software |
| **Equipment** | Misc laboratory equipment, laboratory computer and printer, freezer, and liquid nitrogen containers |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-014

**Project Source**

**Project Title** QUALITY ASSURANCE FOR CODED-WIRE TAG APPLICATION IN FISH RESTORATION PROJECTS

**Project Category** Technical Service

**Lead Agency** Alaska Department of Fish and Game (ADFG)

**Cooperating Agencies**

**Project Term.** **Start Date.** 1/1/93 **Finish Date.** 12/31/93

## INTRODUCTION

This project will maintain high quality coded-wire tag (CWT) application and CWT data tracking for EVOS restoration projects The target species are pink, chum, and sockeye salmon The Exxon Valdez oil spill severely damaged wild pink and chum salmon populations Various amounts of oil were deposited in intertidal spawning habitats in Prince William Sound (PWS) where up to 75% of the spawning occurs Salmon eggs deposited in 1989 and all subsequent years have been contaminated and direct egg mortality has been documented The growth and survival of juvenile salmon during the early marine period was reduced by oil contamination in 1989 Recently suspected genetic damages resulting from oil contamination in spawning beds may further reduce the productivity and fitness of wild salmon populations for many years to come Sockeye salmon rearing lakes on Kodiak Island and elsewhere were damaged when fisheries were closed allowing large numbers of spawners to escape into rearing lakes The resulting large fry populations overgrazed the resident fry food resources in the lakes causing a reduction in lake carrying capacity The benefits of this project will be realized in the communities of Kodiak, Anchorage, Whittier, Valdez, and Cordova which support important sport and commercial fishing industries in the region

## WHAT

The goal of this project is to establish and maintain high quality CWT application and data tracking procedures within EVOS restoration projects The project will achieve the following objectives

1 Interface CWT application database with CWT recovery databases being developed for restoration projects,

2 Implement appropriate quality control standards, tag application, and data tracking procedures for CWT application within EVOS restoraton projects and provide technical assistance to staff involved with CWT application,

3 Review data from CWT application projects at the end of the season to insure that quality control standards, tag application, and data tracking procedures are maintained, and

4. Conduct a pilot project to develop a methodology to quantify CWT placement in pink salmon fry and incorporate into CWT application database

## WHY

Coded-wire tagging is currently used in several fishery 'management action' and 'resource manipulation and enhancement' projects Management action projects utilize CWT data to (1) direct fishing effort away from damaged wild salmon, and (2) inventory and evaluate the effects of straying hatchery salmon on wild salmon populations Manipulation and enhancement projects utilize CWT as an tool to evaluate project success Failure to assure proper CWT application procedures and data tracking may seriously compromise the quality of CWT programs, confound interpretation of CWT data, and reduce the success of EVOS restoration projects This project is designed to maintain high quality CWT application and data tracking procedures to insure that this stock separation tool provides the expected results

Coded-wire tagging is a very effective tool for marking large numbers of juvenile fish if high quality tag application and data tracking procedures are maintained All CWT programs are based on the assumption that tagged fish are representative of untagged fish Poor tag application and fish handling procedures will result in a violation of this assumption by (1) reducing the growth and survival of tagged fish, or (2) reducing the fishes' ability to home accurately to its stream of origin Standard methods must be used during the application process to minimize damage to tagged fish, insure good tag placement, properly estimate number of tagged fish, number of untagged fish, tag mortality, tag retention, and number of good fin clips This project will benefit all restoration projects that involve coded-wire tagging (e g Red Lake Salmon Restoration, Restoration of Coghill Lake Sockeye, Inventory and Effects of Straying of Hatchery Pink Salmon on Wild Pink Salmon Populations in PWS, Montague Island Chum Salmon Restoration) by insuring maintenance of quality control standards and interfacing of CWT application and recovery databases Technical assistance will be provided to private groups that will use CWT to evaluate restoration program success (e g Chenega Chinook and Coho Stocking)

Poor tag placement is the most likely cause of reduced growth, survival, and homing ability in tagged fish There is documented damage to the olfactory nerve in chum salmon fry tagged with CWT Good placement is particularly important to maintain when tagging pink salmon fry because of their small size Each year approximately one million CWTs are applied to pink salmon at five private non-profit hatcheries in PWS Recovery of these marked fish in hatchery broodstock and common property and cost recovery harvests is essential for effective management of hatchery and wild salmon populations Recovery of CWT fish is currently being used to evaluate the effect of straying hatchery salmon on damaged wild salmon populations in PWS A program to quantify CWT placement in pink salmon is needed to insure that variations in placement between tag codes does not confound interpretation of straying data

## HOW

This project will establish and maintain high quality CWT application and data tracking procedures within all EVOS restoration projects The project will initially focus on a review of existing CWT quality control and tag application procedures Sample sizes and procedures currently used to estimate tag mortality, tag retention, and fin clip quality will be evaluated and adjusted if necessary The existing CWT application database will be interfaced with developing CWT recovery databases Standard quality control, tag application, and data tracking procedures will be implemented Documents detailing these procedures will be distributed to government and private groups responsible for CWT application in various EVOS restoration projects Each CWT application site will be visited periodically to answer

questions and insure that CWT quality standards are being followed Each restoration project involving CWT will prepare a report describing the methods and results from each field season CWT reports will be reviewed for consistency with quality standards and recommendations will be developed for further improvement of the program

A pilot study will be conducted to collect data needed to design a program to quantify CWT placement in pink salmon fry Samples of tagged fry (n=200) will be collected from randomly selected tag groups/codes of pink salmon Fry tissues will be cleared with a sequential treatment of formaldehyde and potassium hydroxide solution A computer image analysis system will be used to quantify tag placement within the head of each fish relative to a reference line drawn between the eyes Histological analyses will be conducted to determine the degree of olfactory nerve damage in fish exhibiting poor tag placement The data obtained from the study will be used to estimate sample sizes and costs associated with quantification of tag placement

## ENVIRONMENTAL COMPLIANCE

This project will not have a direct impact on any environmental parameters

## WHEN

This project will take place during FY93 Project activities will occur throughout much of the year (Table 1)

Table 1 Annual schedule of project activities

| Date | Activity |
|---|---|
| Jan - Feb | Review and revise CWT quality control standards and interface CWT application database with CWT recovery databases |
| Feb - June | Collect samples for tag placement study and assist restoration project staff involved with CWT application |
| June - July | Review data from CWT application projects |
| July - Sept | Process samples from tag placement study and analyze data |
| Oct - Nov | Prepare annual report |

EXXON VALDEZ TRUSTEE COUNCIL

Project Description This project will establish and maintain procedures for high quality coded-wire tag application and data tracking for all EVOS restoration projects The project will review and update existing quality assurance and tag application procedures, including sample sizes, tagging mortality, tag retention and fin clip quality Record keeping and data retrieval procedures will be interfaced with existing databases to expedite analyses and management decisions

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $68 4 | $68 4 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Travel | $0 0 | $3 8 | $3 8 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Contractual | $0 0 | $10 3 | $10 3 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Commodities | $0 0 | $1 0 | $1 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Equipment | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $0 0 | $83 5 | $83 5 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | $11 3 | $11 3 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Project Total | $0 0 | $94 8 | $94 8 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | 0 0 | 1 3 | 1 1 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| 1 FB I | 5 | $18 2 |
| 1 FB II | 5 | $20 2 |
| 1 Biom II | 1 | $5 2 |
| 1 P/A II | 1 | $4 2 |
| 1 A/P IV | 1 2 | $6 7 |
| 1 P/S II | 0 7 | $3 1 |
| 1 Program Manager | 0 7 | $3 3 |
| | 1 | $7 5 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** If not funded in FY 94, $9 6K is needed for preparation of a final report

17 Jul 92

**1993**



Project Number 93-014
Project Title Quality Assurance for PWS Coded Wire Tagging and Fish Production Records for Improved Mgmt Ability
Agency ADF&G

FORM 2A PROJECT DETAIL

| | |
|---|---|
| **Travel** | Travel cost will be incurred by project personnel only as necessary to confer with other members of the project team and to accomplish specifically assigned tasks |
| **Contractual** | Contractual costs are required for air charter transportation to project locations to provide the required quality assurance training and record keeping for the coded-wire tagging projects |
| **Commodities** | Spare parts and incidental materials for the coded-wire apparatus |
| **Equipment** | Personal field safety equipment and protective clothing |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-015

**Project Source**

**Project Title** Kenai River Sockeye Salmon Restoration

**Project Category** Restoration Management Action

**Project Type** Fish/Shellfish

**Lead Agency** Alaska Department of Fish and Game (ADF&G)

**Cooperating Agencies**

**Project Term** **Start Date** 1/3/92 **Finish Date** 9/30/96

**INTRODUCTION**

Sockeye salmon *Oncorhynchus nerka* which spawn in the Kenai River system were injured by the *Exxon Valdez* oil spill Greatly reduced fishing time in the Upper Cook Inlet area due to the oil spill caused sockeye spawning escapement levels in the Kenai River system to exceed the desired amount by three times The biological impact of the oil spill on Kenai River sockeye salmon stocks is expected to be serious Data collected by NRDA Fish/Shellfish Study 27, *Sockeye Salmon Overescapement*, showed greatly reduced survival estimates of juvenile sockeye salmon during the winter-spring rearing period The extremely high escapement appears to have produced more rearing juvenile sockeye salmon than could be supported by nursery lake productivity In general, when rearing salmon abundance greatly exceeds lake carrying capacity, the species and size composition of prey resources are altered which, in turn, affects all trophic levels Because of such changes, juvenile sockeye growth is reduced and freshwater mortality is increased Greater numbers of fry remain in the lake for another year of rearing Competition for a limited food supply reduces condition of surviving fry Marine mortality is increased because of poor condition of outmigrating smolts

Limiting sockeye salmon fry production by closely regulating the number of spawning adults is the best way to restore the productivity of these rearing areas However, the number of adult sockeye salmon returning from the 1989 overescapement may be so low that a severe reduction, or complete elimination, of human use of this species may be necessary starting in 1993 to ensure minimum spawning escapements

This project consists of increased monitoring and management of the sockeye salmon stocks in the Kenai River and Upper Cook Inlet (UCI) north of Anchor Point The project will benefit subsistence, sport, and commercial fishermen in coastal communities throughout Cook Inlet, from Homer north through Anchorage to Tyonek In 1992 nearly 10,000 families obtained subsistence permits to harvest salmon in UCI, most targeting Kenai River sockeye salmon The most recent statistics indicate that nearly 100,000 sport anglers fished the Kenai River for salmon in 1990, spending $38 million in 1986 dollars Forty percent of those anglers were from out of state Of the 1,323 permits licensed to commercial fish in UCI, 80% are fished by state residents with the remaining predominately from Pacific Coast states Average ex-vessel value (1987-1991) of the UCI commercial salmon harvest was $ 67 8

million

**HAT**

The goal of this project is to restore Kenai River sockeye salmon stocks injured by the oil spill This will be accomplished through improved stock assessment capabilities, more accurate regulation of spawning levels, and modification of human use Restoration of Kenai River sockeye salmon stocks will be achieved when average fry, smolt, and adult production can be maintained at pre-spill levels Prey resources of rearing lakes must also be restored to normal levels (This will be monitored under another restoration study, which will be based on information obtained from NRDA Fish/Shellfish Study 27)

Specific objectives of this proposal are to (1) improve stock identification capabilities by combining parasite and genetic stock identification information with available scale growth data to provide statistically reliable estimates of Kenai River stocks in the mixed stock fishery of Upper Cook Inlet (UCI), (2) increase the accuracy and precision of escapement monitoring by supplementing hydroacoustic equipment used in the Kenai River, and (3) provide more accurate estimates of abundance of Kenai River sockeye salmon within UCI through hydroacoustic assessment techniques

**WHY**

More intensive management is necessary to restore affected stocks to pre-spill levels and maintain them at those levels until the populations stabilize This project will help restore those stocks by providing the information needed to properly manage human uses Intensive fisheries management will temporarily reduce human pressure on these injured stocks to speed their recovery As a means of minimizing impacts on the fisheries, existing fisheries may need to be restricted or redirected to alternative sites or Cook Inlet this will relieve pressure on what are anticipated to be small runs to the Kenai River in the next several years without shutting down other UCI fisheries

**HOW**

**Stock Identification**

Stock identification studies used to regulate human use of UCI sockeye salmon have, in past years, relied on scale growth patterns The accuracy and precision of this technique has varied considerably from year to year Kenai stocks typically dominate the total return and their scale patterns are generally distinct enough to provide some separation from other stocks However, when runs to other systems are more abundant (as may occur in 1993-1995) separation of Kenai stocks will be much more difficult Improvements in stock identification procedures will be necessary to identify the contribution of Kenai River sockeye salmon to the total run accurately in this situation Recent work by ADF&G, in cooperation with National Marine Fisheries Service staff, has shown that parasite occurrence can be used to improve estimates of stock contribution during the fishing season The combination of scale patterns, parasites and genetic stock identification techniques (Restoration Science Study Number 59) will greatly increase the accuracy of UCI stock assessment estimates

Sockeye salmon escapements into major drainages of Upper Cook Inlet were sampled for genetic, parasite, scale and otolith characteristics in 1992 During 1993, 20 additional baseline populations will be sampled and mixed-stock samples will be collected from the commercial drift gillnet fishery Stock composition of mixed stock fishery samples will be estimated using scale pattern analysis, parasite data, genetic data, or a combination of all three Stock resolution will be enhanced by using several kinds of biological marker data simultaneously Typically a maximum-likelihood estimation procedure for a mixture problem with learning samples has been used to combine these data The principal

components of this project are sample collection, transportation to genetic laboratory facilities (for separation by Restoration Study Number 59) and real time stock composition modeling necessary for season resource management decisions

**Escapement Monitoring**
Bendix Corporation side-scan hydroacoustic equipment has been used since 1976 to count adult sockeye salmon entering the Kenai River to spawn Lack of Bendix replacement parts and the inability to purchase new Bendix counters will compromise our future ability to provide escapement estimates Accuracy of estimates would be greatly enhanced through use of newer, more technically advanced equipment Evaluation of new equipment in 1992 will result in selection of the most appropriate replacement system Beginning with the 1993 field season, ADF&G will conduct continuous operations with both Bendix and new equipment on both banks of the Kenai River during a three week period to encompass the peak of the sockeye salmon run

**Offshore Assessment Program**
Sockeye salmon returning to UCI are captured with a drift gill net at a series of stations between Anchor River and Red River delta Estimates of the total sockeye salmon return are made several times during the season by estimating expected total test fishery catch per unit of effort for the season and catchability of sockeye salmon in the test fishery calibrated by the commercial drift gillnet fishery Analysis of historical data indicates that existing sampling effort and catch has not been proportional to abundance Calibration by the commercial fleet is not guaranteed for future reduced run sizes In 1992 hydroacoustic equipment and techniques were evaluated by a contractor experienced in marine salmon investigations to supplement the existing program Anticipated results include 1) operating parameters of the hydroacoustic system used, 2) real time estimates of fish density, 3) fish distribution across the transects, and 4) definition of run timing models and total return estimates In 1993 a hydroacoustic survey will be conducted to provide a real-time estimate of adult sockeye salmon in UCI Placement and duration of transects needed for the 1993 survey will be based on 1992 results to provide an appropriate level of precision and accuracy for an abundance estimate of sockeye salmon This is to include appropriate species composition estimates of fish targets

**ENVIRONMENTAL COMPLIANCE** A Corps of Engineers Section 10 or 404 permit, State of Alaska Title 16 permit, and a finding that this project is consistent with the Alaska Coastal Zone Management Plan may be required

**WHEN** Four additional years will be required to meet project objectives Adult returns from the injured 1989 brood year will occur during 1993-1995, but information on the 1990, 1991, and 1992 brood years will also be needed to monitor recovery of the system Adult returns from the 1992 brood year will not be observed until 1996

**Events and Milestones for 1992-1993**

1992

Aug Begin to evaluate results of escapement monitoring, purchase new equipment and design escapement monitoring for 1993

1993

Jan Begin to evaluate results from the offshore hydroacoustic investigation and design a survey for 1993

April Results of baseline genetic sampling due to evaluate accuracy and precision of stock composition modeling and set sample design and sample size goals for 1993

May Award contract for the offshore hydroacoustic survey in UCI to begin in July

June Begin field work fishery sampling and escapement monitoring begin in July, and escapement sampling for stock identification baselines through September

Sept Interim Report to include (1) performance of stock composition modeling with scale, genetic, and parasite data, (2) estimates of adult sockeye escapement in the Kenai River, and (3) offshore hydroacoustic estimates of sockeye salmon

EXXON VALDEZ TRUSTEE COUNCIL

Project Description This project restores depressed Kenai River sockeye stocks by directing fisheries away from impacted stocks and allowing fishing on healthy stocks This is done through improved stock identification capabilities (in association with 93-012, Kenai Genetic Sockeye I D ), available scale growth data, parasite information, and hydroacoustics escapement monitoring, and fishery sampling

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $73 3 | $271 0 | $344 3 | $291 0 | $304 7 | $75 0 | | |
| Travel | $4 2 | $15 5 | $19 7 | $16 0 | $16 6 | $4 0 | | |
| Contractual | $116 4 | $270 5 | $386 9 | $270 0 | $280 8 | $5 0 | | |
| Commodities | $3 2 | $36 0 | $39 2 | $36 0 | $37 4 | $5 0 | | |
| Equipment | $86 9 | $81 0 | $167 9 | $20 0 | $20 8 | $1 0 | | |
| Capital Outlay | $0 0 | | $0 0 | $0 0 | $0 0 | $0 0 | | |
| Sub-total | $284 0 | $674 0 | $958 0 | $633 0 | $660 3 | $90 0 | $0 0 | $0 0 |
| General Administration | $19 1 | $58 6 | $77 7 | $61 6 | $63 8 | $11 7 | | |
| Project Total | $303 1 | $732 6 | $1,035 7 | $694 6 | $724 1 | $101 7 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | 0 0 | 5 7 | 5 7 | | | | | |

| Budget Year Proposed Personnel Position | Months Budgeted | Cost |
|---|---|---|
| 10 FWT II | 29 | $88 5 |
| 4 FWT III | 16 | $52 5 |
| 2 FB I | 8 | $34 1 |
| 1 FB II | 3 | $16 5 |
| 1 FB III | 2 5 | $15 8 |
| 1 Program Manager | 3 5 | $22 5 |
| 1 Biometrician | 4 | $27 8 |
| 1 A/P IV | 1 3 | $6 7 |
| 1 A/P II | 0 8 | $3 1 |
| 1 Publication Specialist | 0 8 | $3 3 |

Comment

* FY93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for Januarry and February, 1993

** If not funded in FY94, $90 0K will be needed for analysis of data collected Fall of 93 and for report preparation

17 Jul 92

1993



Project Number 93-015
Project Title Kenai River Sockeye Salmon Restoration
Agency ADF&G

FORM 2A PROJECT DETAIL

| | |
|---|---|
| **Travel** | Travel cost will be incurred by project personnel only as necessary to confer with other members of the project team and to accomplish specifically assigned tasks |
| **Contractual** | Includes an Upper Cook Inlet hydroacoustic survey, air charter cost to collect genetic baseline samples telephone local and long distance, air freight for samples, software license, network support, and office overhead Includes truck rental for field season and equipment repairs, calibration of inriver sonar equipment |
| **Commodities** | Includes food and fuel for remote sampling, sampling supplies, office supplies, software and software upgrades data processing and reporting supplies |
| **Equipment** | Includes 3 electronic measuring boards (replaces 1 technician each), network cards, chart recorder, hydroacoustic equipment, gill nets, sampling supplies not considered commodities, data processing |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** **93-016**

**Project Source**

**Project Title** Chenega Chinook and Coho Salmon Release Program

**Project Category** Manipulation and Enhancement

**Project Type**

**Lead Agency** ADF&G

**Project Term** **Start Date** 1/1/1993 **Finish Date** 12/31/2003

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## INTRODUCTION

A Background Due to the oil spill, stocks of salmon were seriously impacted by gross pollution Subsistence as well as sport and commercial fisheries were disrupted Traditional usage of fish stocks and fishing grounds by the Chenega Village residents was lost This project will help to restore lost subsistence fishing and establish new alternate subsistence fishing opportunities

B Injury As a result of the Exxon Valdez Oil Spill, subsistence harvest of salmon and other resources was disrupted

C Location Fish production at W Noerenberg (WHN) Hatchery at Esther Island in PWS (This is the preferred site if production can be accomplished without major modifications) Fish will be released and harvested in the vicinity of Chenega Village in southwestern Prince William Sound, at Deadend Bay

## WHAT

A Goal To replace subsistence resources by permitted releases of chinook and coho salmon at designated sites near Chenega village from stocks of Prince William Sound Aquaculture Corporation (PWSAC) Wally Noerenberg Hatchery near Esther Island

B Objectives

- Produce 50,000 chinook salmon smolts at the W Noerenberg Hatchery for transport and release at site(s) near Chenega Village
- Hold and feed, the smolts in net pens at the release site for 2 weeks before they are released
- Harvest approximately 1500 adult chinook salmon when they return (Assume 3% survival rate, 4 years before all year classes are represented)
- Produce 50,000 coho salmon smolts for transport, holding, feeding and release near Chenaga Village

- Harvest approximately 2500 adult coho salmon annually (assume 5% survival rate, annual return beginning 1 year after first release)

**WHY**

A Benefit These projects will restore and improve subsistence salmon harvests that were lost because of the Exxon Valdez Oil Spill

B Restoration Goals Results from this project will help to restore lost subsistence fisheries (Restoration Options replace lost subsistence use (Management of Human uses) 18 (Resource Manipulation), 30 (Other) related to hydrocarbon contamination of subsistence foods

**HOW**

A Method

1) Smolts will be utilized from existing production lots and raised to smolt stage at the W H N Hatchery

2) Smolts will be transported by barge to the designated sites

3) Smolts will be held and fed in net pens for 2 weeks before release to improve survival and imprinting

4) Adults will be harvested when they return

- Chinook Salmon broodstock - from hatchery stock

- Coho Salmon broodstock - from donor stock near the release site

- All plans will be reviewed by the PWS Regional Planning Team (RPT) and by the Fish Transport Permit (FTP) process and will comply with the ADF&G Fish Genetics Policy

B Other Efforts This project will provide an alternate source of food for subsistence use and reduce the need for reliance on wild stocks that were injured by the oil spill

**ENVIRONMENTAL COMPLIANCE**

This project will be reviewed by the NEPA Process, the PWS RTP, and the ADF&G FTP review before it is implemented

**WHEN** FY1993 January - Plans are reviewed by the NEPA process, PWSAC, and the PWSAC RPT
June - first chinook smolts transported, penned, fed, and released

| | |
|---|---|
| FY1994 | October - coho salmon broodstock screening and selection<br>June - first "adult" (jack) returns of chinook salmon |
| FY1995 | October - first coho salmon eggs are taken from the designated location |
| FY1996 | First coho salmon smolts are released |
| FY1997 | August - first coho salmon adults return<br>June - first complete complement of all chinook salmon age classes return |

Each year, smolts will be released in June (or late May)

Chenega chinook and coho salmon release program

| | | |
|---|---|---|
| Chinook Salmon | - egg take and rearing<br>(50,000 smolts at $0 25 per smolt) | $12,500 |
| | - tagging<br>(5000 fish at 0 20/fish) | $1,000 |
| | - transport<br>(2 days at $2,000/day) | $4,000 |
| | - net pens and on-site rearing | $4,000 |
| | (FY1994) Sub-Total | $21,500 |
| Coho Salmon | - broodstock screening and evaluation<br>(Fish Pathology and Genetics)(FY1993) | $5,000 |
| | - egg take (FY1995) (70,000 eggs,<br>20 females, remote site) | $5,000 |
| | - tagging (FY1995)<br>(5000 at 0 20/fish) | $1,000 |
| | - rearing and production (FY1995)<br>(50,000 smolts at $0 25 per smolt) | $12,500 |
| | - transport (FY1995)<br>(2 days at $2,000/day) | $4,000 |
| | - net pens and on-site rearing (FY1995) | $4,000 |
| | Sub-Total | $26,500 |

Project Description Due to the oil spill, stocks of salmon were seriously impacted Subsistence as well as sport and commercial fisheries were disrupted Traditional usage of fish stocks and fishing grounds by the Chenega Village residents was lost This project will help to resore lost subsistence fishing and establish new alternate subsistence fishing opportunities

| Budget Category | Approved 1-Oct-92 31-Dec-92 | Proposed 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $2 5 | $2 5 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Travel | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Contractual | $0 0 | $21 5 | $21 5 | $26 5 | $40 0 | $48 0 | $48 0 | $48 0 |
| Commodities | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Equipment | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $0 0 | $24 0 | $24 0 | $26 5 | $40 0 | $48 0 | $48 0 | $48 0 |
| General Administration | $0 0 | $1 9 | $1 9 | $1 9 | $2 8 | $3 4 | $3 4 | $3 4 |
| Project Total | $0 0 | $25 9 | $25 9 | $28 4 | $42 8 | $51 4 | $51 4 | $51 4 |
| Full-time Equivalents (FTE) | | | | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| 1 Program Manager | 0 3 | $2 5 | |

** If not funded in FY94, there will be no closeout costs for this project, however, this will result in no silver salmon smolt being released

17 Jul 92

1993



Project Number 93-016
Project Title Chenega Bay Chinook and Silver Release
Agency ADF&G

FORM 2A
PROJECT
DETAIL

| | |
|---|---|
| **Travel** | None |
| **Contractual** | This project will be accomplished through a contractor who will produce the smolts for release that will return as adults Separate tasks for chinook salmon production include egg take and rearing ($12 5K), tagging ($1 0K) transport ($4 0K), on-site rearing and release ($4 0K) Separate tasks for the coho salmon production include brood stock ID (FY94 only)($5 0K), egg take ($5 0K), tagging ($1 0K), rearing ($12 5K), transport ($4 0K), on-site rearing and release ($4 0K) |
| **Commodities** | None |
| **Equipment** | None |

## EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number:** 93-017

**Project Source:**

**Project Title:** Subsistence Restoration Project

**Project Category:** Restoration Management Actions

**Project Type:** Subsistence

**Lead Agency:** Alaska Department of Fish and Game

**Cooperating Agencies.** United States Department of the Interior, Bureau of Indian Affairs

**Project Term:** **Start Date:** 1/1/93 **Finish Date:** 9/30/95

**INTRODUCTION:** Subsistence use of fish and wildlife constitute a vital natural resource service that was injured by the *Exxon Valdez* oil spill Data collected by the Alaska Department of Fish and Game's Division of Subsistence has demonstrated this injury Annual per capita subsistence harvests declined dramatically (from 12 percent to 77 percent decline compared to pre-spill averages) in ten of the communities in the path of the spill during the first year after the event While some of these communities' harvests demonstrated a limited recovery in the second post-spill year, harvest levels in other affected communities showed no signs of recovery Concern over the long-term health effects of using resources from the spill area, a loss of confidence on the part of subsistence hunters and fishermen in their own abilities to determine if their traditional foods are safe to eat, and a perceived reduction in available resources, all contribute to the reduced harvest levels We propose to undertake a subsistence restoration project involving the following communities, Chenega Bay, Tatitlek, Cordova, Valdez, Nanwalek, Port Graham, Seldovia, Kenai, Seward, Larsen Bay, Karluk, Old Harbor, Akhiok, Port Lions, Ouzinkie, Kodiak City, Chignik Lake, Chignik, and Chignik Lagoon

**WHAT:** The goal of the project is to restore the subsistence use of fish and wildlife damaged by the *Exxon Valdez* Oil Spill Community meetings will be held in order to identify and map the specific areas and resources of continued concern to subsistence users This will provide a comprehensive, final opportunity to identify these concerns We will coordinate with the Alaska Department of Environmental Conservation in their spring shoreline survey (Restoration Project #38) in order to corroborate the reports of persistent oiling Samples of subsistence foods will be collected from harvest areas identified during the mapping Community representatives will assist in site selection, as well as the collection of samples The samples will be analyzed for the presence of hydrocarbon contamination The results of the tests, along with findings from other damage assessment and restoration studies, will be interpreted by the Oil Spill Health

Task Force, and reported to the communities in an informational newsletter and community visits

This information will assist the Trustee Council in making decisions concerning restoration, enhancement or replacement of lost subsistence resources and uses In addition, some mitigation of lost subsistence use will be provided by making funds available to communities to support travel to harvest areas away from oiled sites or to areas where resources have not been depleted As further mitigation, funds will be made available to support subsistence food sharing programs between communities

**WHY:** The Oil Spill Health Task Force has had some success in conveying the message that most subsistence foods are safe to eat However, concern about long-term effects remains Also, the limited access to the damage assessment studies has created the impression in most communities that the task force did not base its conclusions on a complete assessment of all data We need an opportunity to put the information from the damage assessment into context This will help to empower the people in the impacted communities to make informed decisions and encourage those who are so inclined to return to using more subsistence resources It would also restore the communities' abilities to pass on skills and knowledge associated with using subsistence foods

Making information from subsistence users part of the restoration process will facilitate the recovery of subsistence use areas, the importance of which might otherwise be missed There is a need in these communities to actively participate in restoration of the environment This project would provide for this involvement

The project answers the need to continue to monitor the risks to human health from the oil spill This is consistent with the goal of restoring human services of the natural resources damaged in the oil spill It also addresses the need to restore the natural resources and the services these resources previously provided to subsistence users

**HOW:** By involving subsistence users in decisions affecting mitigation, and the monitoring, enhancement and replacement of the natural resources, we can accelerate the recovery of the resources subsistence users rely upon This, combined with effective communication of information concerning the safety of the resources should cause subsistence harvests to begin to approach pre-spill levels, and reduce anxiety about their use

The Division of Subsistence will use the results of a joint study currently being conducted with the U S Mineral Management Service in 15 communities impacted by the *Exxon Valdez* oil spill to determine the communities where concern continues to exist, as well as the nature of that concern As a member group of the Oil Spill Health Task Force, the Division of Subsistence will continue to ensure coordination with that group

Although the details of the subsistence research being undertaken by the Department

of the Interior as part of the Chenega Bay settlement are not available to us due to the litigation sensitive nature of the work, we have been assured by a representative of the U S Department of the Interior, that there is no overlap between our study and theirs

**ENVIRONMENTAL COMPLIANCE:** This project is categorically excluded under NEPA guidelines

**WHEN: Note: there will be ongoing communication with subject communities throughout the duration of the project, with visits to communities as needed.**

January 1-May 31, 1993 Community meetings to map areas and species of concern
March - September, 1993 - Organize subsistence food sharing program and support of harvesting activities in alternative areas
June-July 1993 Coordinate with DEC shoreline assessment to verify oiling information
June 1993 Collect subsistence food samples for testing (anticipate 2 month turn around for test results)
August 1993 Informational newsletter issued
September 1993 Collect subsistence food samples for testing
November 1993 Informational newsletter issued
December 1993 Collect subsistence food samples for testing
February 1993 Informational newsletter issued
March 1994 Collect subsistence food samples for testing
May 1994 Informational newsletter issued
June-July 1994 Coordinate with DEC shoreline assessment to verify oiling information
June 1994 Develop plan for additional cleanup/mitigation of oil
September 1994 Develop plan for enhancement/replacement of resources
May 1995 Coordinate with DEC shoreline assessment to verify oiling information

Project Description This project is aimed at restoring the use of subsistence resources by residents of the oil spill affected region In cooperation with community representatives, samples of food items will be taken from harvest areas These samples will be analysed for the presence of hydrocarbon contamination If appropriate, and in cooperation with appropriate agencies and communities, a clean-up and mitigation plan will be developed, where direct action is not feasible, a plan will be developed to identify alternative resources

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $61 5 | $61 5 | $76 8 | $76 8 | | | |
| Travel | $0 0 | $30 0 | $30 0 | $41 0 | $41 5 | | | |
| Contractual | $0 0 | $167 0 | $167 0 | $185 0 | $29 5 | | | |
| Commodities | $0 0 | $0 8 | $0 8 | $1 0 | $1 0 | | | |
| Equipment | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | | | |
| Sub-total | $0 0 | $259 3 | $259 3 | $303 8 | $148 8 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | $21 9 | $21 9 | $24 5 | $13 6 | | | |
| Project Total | $0 0 | $281 2 | $281 2 | $328 3 | $162 4 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | 1 1 | 1 1 | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| Subsistence Res Spec II | 9 | $38 5 |
| Subsistence Res Spec II | 2 | $8 5 |
| Program Manager | 1 | $7 5 |
| Analyst/Programmer IV | 0 5 | $2 7 |
| Analyst/Programmer II | 0 5 | $2 1 |
| Publication Specialist | 0 5 | $2 2 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** If not funded in FY 94, $46 9K will be needed for lab analysis, report preparation and delivery of report to the communities

17 Jul 92

1993



Project Number 93-017
Project Title Subsistence Food Safety Survey and Testing
Agency ADF&G

FORM 2A PROJECT DETAIL

**Travel**

community mapping meetings
other community travel

**Contractual**

sample collection
hydrocarbon testing
copying and phone costs
newsletters(printing, mailing)
data management
Support for travel to alternate harvest
areas & sharing subsistence foods

**Commodities**

supplies, notebooks, etc

**Equipment**

17 Jul 92

**1993**



Project Number 93-017
Project Title Subsistence Food Safety Survey and Testing
Agency ADF&G

FORM 2B
PROJECT DETAIL

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** **93-018**

**Project Source**

**Project Title** Enhanced Management for Wild stocks in Prince William Sound, Special Emphasis on Cutthroat Trout and Dolly Varden

**Project Category** Restoration Management actions

**Project Type** Fish/Shellfish

**Lead Agency** Alaska Department of Fish and Game

**Cooperating Agencies** United States Forest Service

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**Project Term** **Start Date** 1/1/93 **Finish Date** 9/30/94

## INTRODUCTION

The status of many of the wild fish stocks and their habitats in the aftermath of the oil spill, are unknown Numerous efforts have been conducted or initiated to evaluate effects of the oil spill on specific stocks and information exists scattered throughout various agencies on various aspects of some of these stocks Higher mortality and slower growth rates for Dolly Varden and cutthroat trout were documented in oiled areas compared to non-oiled areas Recreational fishing for Dolly Varden and cutthroat trout was curtailed by emergency closures and changes in sport regulations following the oil spill, likely resulting in faster recovery times for the stocks that were closed to sport fishing In other parts of Prince William Sound (PWS), however, there is insufficient information on which to base population management actions for these two species In addition, information to prioritized population and habitat management actions for most of the wild fish stocks in PWS is lacking or at least unconsolidated Without appropriate information on which to base management action, injury may occur to other stocks due to overfishing or overly conservative regulations may be made which would unnecessarily restrict recreational sport fishing opportunities Likewise, a readily accessible informational database is needed to identify appropriate strategies for protecting, maintaining and enhancing populations and habitat of wild stocks of fish in PWS

Project personnel will operate weirs in Cordova, Valdez and western PWS at Eshamy Creek to sample outmigrating cutthroat trout and Dolly Varden Where possible enumerations of other salmon smolts will be made Concurrently, the Forest Service will construct a database of information on the wild stocks of cutthroat trout, Dolly Varden, coho salmon, pink salmon, and all other freshwater and anadromous fish in PWS The combination of these two efforts will benefit all users who participate in sport fisheries in PWS by providing the means to assist resource managers in making prudent decisions regarding the viability and long term sustainable yield of all fish species in PWS

## WHAT

The goal of this project is to collect the information needed for the responsible management of populations and habitats of all fish species in PWS with a special emphasis on Dolly Varden and

cutthroat trout Resultant management actions will be prioritized towards recovery of depressed stocks all species while assuring that anglers can fish for Dolly Varden and cutthroat trout where stocks are healthy enough to withstand fishing pressure

Alaska Department of Fish and Game (ADF&G) objectives are,

1 ) Determine the abundance of anadromous Dolly Varden and cutthroat trout over 200 mm in length outmigrating from Eyak Lake, McKinley Lake, Robe Lake and Eshamy Lake for both 1993 and 1994

2 ) Obtain length compositions of the 1993 and 1994 outmigrations of Dolly Varden and cutthroat trout over 200 mm in length from Eyak Lake, McKinley Lake, Robe Lake and Eshamy Lake such that the composition is within ± 5% of the true value 95% of the time

3 ) Estimate mean length at age for anadromous cutthroat trout that overwintered in Eyak Lake, Mckinley Lake, and Eshamy Lake such that the estimate is within ± 10mm of their true value 90% of the time

United States Forest Service (USFS) objectives are

4 ) Compile existing information on all freshwater and sea-run fish stocks in PWS in a readily available computerized format that will be made available to all interested resource management agencies

**WHY**

The goal of this project is to collect the information needed to develop management strategies which will provide for the responsible management of wild fish stocks and their habitats in PWS, with special emphasis on Dolly Varden and cutthroat trout Restoration project R 106, which was funded in 1991, provided preliminary information about the distribution of Dolly Varden and cutthroat in PWS and the adjoining CRD Numerous other studies on other fish species have been conducted since the oil spill and much information prior to the oil spill on fish stocks in PWS exists scattered among various agencies and researchers Information on where populations exist, their significance (eg , biological, commercial, recreational cultural), habitat limiting factors, susceptibility to disturbance and potential impacts to populations and habitats is needed to adequately prioritize management actions The availability of all this information in a readily accessible computerized format will increase the effectiveness of the Forest Service and other resource managers in the maintenance of population diversity in PWS

Cutthroat trout and Dolly Varden population information is currently lacking for many sites in PWS Two of the overwintering populations which will be studied in 1993 and 1994 are those of Eyak and McKinley Lakes Both of these lake systems currently support popular sport fisheries, however abundance and length composition for these populations is not known Therefore we don't know how much fishing pressure either population can sustain Furthermore, logging activities are planned for the Eyak Lake drainage Population data from this site prior to logging will be useful in assessing the impacts of logging on these populations Robe Lake was selected for evaluation because of the habitat restoration opportunities that exist at this site This drainage once supported active sport fisheries for salmon and Dolly Varden However, the lake has physically deteriorated in the last 20 years, and we don't know is what the lake currently supports for terms of fish Because this site has the possibility of replacing

lost fishing opportunity we feel that population research at this site is warranted Eshamy Lake was a IDA treatment site for Dolly Varden and cutthroat trout We believe that it should be continued to be .Jnitored in order to gauge the recovery of populations that were exposed to oil Abundance and length parameters for the populations of the four sites will be studied for two consecutive years to obtain accurate estimates These estimates, along with the information gained from NRDA F/S 5 and R 106 will be used to form a regulatory package for Dolly Varden and cutthroat trout fisheries in PWS that will be presented to the Alaska Board of Fisheries in 1996

**HOW**

To estimate abundance of sea-run cutthroat trout and Dolly Varden all emigrating fish over 200 mm in length, passing through weirs placed on the four streams and rivers will be counted during the spring outmigrations for both species To obtain length compositions for overwintering stock, all fish over 200 mm in length will be measured to the nearest 1 mm To obtain estimates of mean length at age, three scales will be removed from all cutthroat trout emigrating through the weirs Age will be determined by examination of the scales

All existing information, including the results of the Dolly Varden and cutthroat trout field portion of this project, will be compiled by a contractor, hired and directed by Forest Service personnel The contractor will work closely with individuals from the AD&G, USFWS, NMFS and USFS researchers, and individuals who have information on wild fish stocks in PWS A computer database will be developed using ORACLE software and will operate in a MS-DOS environment

**NVIRONMENTAL COMPLIANCE**

Title 16 permits will be obtained for each weir that is installed

**WHEN**

1 January - 31 March 1993 - Operational plan will be written, materials purchased, crews will be hired and the Eyak River weir will be constructed
1 January - 15 February 1993 - Contract for FS database will be written
15 February - 15 April 1993 - Contract will be advertised
15 April - 30 June 1993 - Field Season
April 30 1993 - Contract will be awarded
1 May - 1 September 1993 - Database structure developed and collection of information will be started
1 July - 1 September 1993 - Data entry, editing, and analysis Cutthroat trout scales will be aged
30 September 1993 - Preliminary Report
January - 31 March 1994 - Operational plan will be written, materials purchased and crews will be hired
1 September 1993 - 1 September 1994 - Continued data compilation and computer database construction
15 April - 30 June 1994 - Second field Season
1 July - 1 September 1994 - Data entry, editing, and analysis Cutthroat trout scales will be aged
30 September 1994 - Database completed and installed on Forest Service personnel computer
1 September - 1 October 1994 - Final Report will be written

Project Description This is a combined ADF&G and USFS project aimed at obtaining information that can be used to make informed decisions In the case of ADF&G sport fish division, this information will play a role in constucting a regulatory package for the management of Dolly Varden and cutthroat trout in Prince William Sound The Forest Service will use the information from this project to manage the Chugach National Forest for the maintainance of population diversity

| Budget Category | Approved 1-Oct-92 1-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | 148 0 | $148 0 | $161 5 | | | | |
| Travel | $0 0 | 7 0 | $7 0 | $6 8 | | | | |
| Contractual | $0 0 | 85 5 | $85 5 | $72 5 | | | | |
| Commodities | $0 0 | 16 5 | $16 5 | $10 0 | | | | |
| Equipment | $0 0 | 0 0 | $0 0 | $0 0 | | | | |
| Capital Outlay | $0 0 | 0 0 | $0 0 | $0 0 | | | | |
| Sub-total | $0 0 | 257 0 | $257 0 | 250 8 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | 28 2 | $28 2 | $29 3 | | | | |
| Project Total | $0 0 | 285 2 | $285 2 | $280 1 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-Time Equivalents (FTE) | | 3 3 | | | | | | |

| Budget Year Proposed Personnel | Months | |
|---|---|---|
| Position | Budgeted | Cost |
| 1 FB II | 9 | $40 5 |
| 1 GS 11 | 1 | $5 0 |
| 5 FT III | 15 | $49 0 |
| 3 FT I | 7 5 | $20 3 |
| 1 Biometrician | 3 | $15 7 |
| 1 Program Manager | 1 | $7 5 |
| 2 Analyst/Programmers | 3 | $10 0 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** If not funded in FY 94, $118 1K will be needed to remove field camps and for report preparation

7 Jul 92

Project Number 93-018
Project Title Enhanced management for cutthroat trout/Dolly Varden in Prince William Sound
Agency ADF&G and USFS

FORM 2A DETAIL

1993

Project Description This is a combined ADF&G and USFS project aimed at obtaining information that can be used to make informed decisions In the case of ADF&G sport fish division, this information will play a role in constucting a regulatory package for the management of Dolly Varden and cutthroat trout in Prince William Sound The Forest Service will use the information from this project to manage the Chugach National Forest for the maintainance of population diversity

| Budget Category | Approved 1-Oct 92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $143 0 | $143 0 | $156 5 | | | | |
| Travel | $0 0 | $7 0 | $7 0 | $7 0 | | | | |
| Contractual | $0 0 | $35 5 | $35 5 | $22 5 | | | | |
| Commodities | $0 0 | $16 5 | $16 5 | $16 5 | | | | |
| Equipment | $0 0 | $0 0 | $0 0 | $0 0 | | | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | | | | |
| Sub-total | $0 0 | $202 0 | $202 0 | $202 5 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | $24 0 | $24 0 | $24 0 | | | | |
| Project Total | $0 0 | $226 0 | $226 0 | $226 5 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-Time Equivalents (FTE) | | 3 3 | | | | | | |

| Budget Year Proposed Personnel Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| 1 FB II | 9 | $40 5 | * FY 93 is a transition year from the previously used oil |
| 5 FT III | 15 | $49 0 | fiscal year to the federal fiscal year This new project also |
| 3 FT I | 7 5 | $20 3 | includes proposed funding for January and February, 1993 |
| 1 Biometrician | 3 | $15 7 | |
| 1 Program Manager | 1 | $7 5 | ** If not funded in FY 94, $108 1K will be needed to |
| 2 Analyst/Programmers | 3 | $10 0 | remove field camps and for report preparation |

7 Jul 92

1993

page of

Project Number 93-018
Project Title Enhanced management for cutthroat trout/Dolly Varden in Prince William Sound
Sub-Project
Agency ADF&G

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| **Travel** | Cost include flights and per diem for the principal investigator and assistant to supervise and assist field personnel in Valdez and Cordova Travel cost also include flights and per diem for analyst programmer |
| **Contractual** | An independant contractor will be hired to build a 100' X 10' aluminum picket weir to span Eyak River The estimated cost of this construction is $13K Other contractual cost include transportation and storage costs |
| **Commodities** | Commodity costs include groceries and raingear for field crews, as well as a limited amount of sampling and office supplies |
| **Equipment** | There are no equipment costs projected for FY93 |

Project Number 93-018
Project Title Enhanced management for cutthroat trout/Dolly Varden in Prince William Sound
Sub-Project
Agency ADF&G

FORM 3B
SUB-
PROJECT
DETAIL

1993

Project Description This is a combined ADF&G and USFS project aimed at obtaining information that can be used to make informed decisions In the case of ADF&G sport fish division, this information will play a role in constructing a regulatory package for the management of Dolly Varden and cutthroat trout in Prince William Sound The forest services will use the information from this project to manage the Chugach National Forest for the maintainance of population diversity

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | 5 0 | $5 0 | $5 0 | | | | |
| Travel | $0 0 | 0 0 | $0 0 | $0 0 | | | | |
| Contractual | $0 0 | 50 0 | $50 0 | $50 0 | | | | |
| Commodities | $0 0 | 0 0 | $0 0 | $0 0 | | | | |
| Equipment | $0 0 | 0 0 | $0 0 | $10 0 | | | | |
| Capital Outlay | $0 0 | 0 0 | $0 0 | $0 0 | | | | |
| Sub-total | $0 0 | 55 0 | $55 0 | $65 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | 4 3 | $4 3 | $4 3 | | | | |
| Project Total | $0 0 | 59 3 | $59 3 | $69 3 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-Time Equivalents (FTE) | 0 1 | | | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| 1 GS 11 | 1 | $5 0 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** If not funded in FY 94, $10 0K will be needed for report preparation

7 Jul 92

**1993**

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Project Number 93-018
Project Title Enhanced management for cutthroat trout/Dolly Varden in Prince William Sound
Sub-Project
Agency USFS

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| **Travel** | Cost include flights and per diem for the principal investigator and assistant to supervise and assist field personnel in Valdez and Cordova Travel cost also include flights and per diem for analyst programmer |
| **Contractual** | An independant contractor will be hired to build a 100' X 10' aluminum picket weir to span Eyak Lake The estimated cost of this construction is $13K Other contractual cost include transportation and storage costs |
| **Commodities** | Commodity costs include groceries and raingear for field crews, as well as a limited amount of sampling and office supplies |
| **Equipment** | There are no equipment costs projected for FY93 |



Project Number 93-018
Project Title Enhanced management for cutthroat trout/Dolly Varden in Prince William Sound
Sub-Project
Agency USFS

FORM 3B
SUB-
PROJECT
DETAIL

# *EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION*

**Project Number** 93-019

**Project Source**

**Project Title** Chugach Region Village Mariculture Project

**Project Category** Restoration Enhancement

**Project Type** Shellfish

**Lead Agency** Fish & Game

**Cooperating Agencies** Chugach Regional Resources Commission

**Project Term** **Start Date** 10/1/92 (day/month/year) **Finish Date** 9/30/96 (day/month/year)

## INTRODUCTION

This project involves the culture of bivalve shellfish for use as a subsistence food and for economic development in Native villages of the Chugach Native Region There are five Native villages in the region, Eyak, adjacent to Cordova, Tatitlek in northern Prince William Sound, Chenega Bay in southwest Prince William Sound, and Nanwalek and Port Graham, both of which are located on the southwestern tip of the Kenai Peninsula All these villages will participate in this project Shellfish have long comprised a significant subsistence food resource for these villages This resource also has commercial potential for mariculture A pilot commercial mariculture project underway near the Chenega Bay village in 1989 was aborted because of the oil spill

The March 1989 Exxon Valdez oil spill adversely affected the waters and beaches utilized by the villagers This environmental disaster dramatically underlined the long-standing reliance of Chugach Native villages on the productivity of the marine habitat for their livelihood and traditional lifestyle

Shellfish resources in the oil spill-affected area suffered double jeopardy First, the sheltered habitats that were most hospitable to shellfish were also most protected against Prince William Sound's natural cleansing action Oil spill residues tend to persist in contaminated shellfish habitats The National Oceanic and Atmospheric Administration estimated that oil could remain in sheltered, low energy areas for twenty years or longer Regardless of the action taken to remove the oil from shellfish beds, it will be a long time before these shellfish could be considered fit to eat Second, the tendency of shellfish to accumulate, concentrate and store toxic contaminants such as polycyclic aromatic hydrocarbons (PAHS) compounds this habitat damage An active approach to replace lost resources is needed

The upshot is that the oil spill badly eroded community confidence in the healthfulness of this subsistence shellfish stocks It also arrested initial efforts to explore the commercial feasibility of shellfish mariculture

Thus, the oil spill has given special impetus and urgency to ongoing efforts to initiate Native-sponsored shellfish mariculture projects Mariculture is a feasible and cost-effective means to conserve, repair and enhance the natural productivity of the renewable resource base

## WHAT

The broad long range goal of the village mariculture project is to strengthen the villages' economic well-being and self-sufficiency through the culture of shellfish stocks for subsistence and commercial harvest

Three specific project sub goals are identified to implement the long range goal to strengthen Chenega Bay and Tatitlek's economies and economic self-sufficiency

- develop self-supporting village-owned and -managed commercial mariculture enterprises
- create new local opportunities for employment and earned income
- restore/enhance traditional subsistence as a supplement to cash income

Eyak, Tatitlek and Chenega Bay have already begun the process of establishing mariculture operations The first year project objective for these villages will be to complete the development of initial mariculture facilities installation, initiate maintenance activities and expand mariculture training program for the villagers

First year objective for English Bay and Port Graham will be to identify potential sites for mariculture operations and initiate permitting procedures required for mariculture development

Objectives for the ensuing years of the project will involve establishing mariculture operations for Port Graham and Nanwalek, continued training, expanding production and continued market development

## WHY

This project will provide the villages of the Chugach Native region with a means to develop the local bivalve resource in a manner that provides some level of protection against man-made disasters such as EVOS The local marine environment offers one of the very few opportunities available to theses villages for economic development EVOS amply demonstrated how vulnerable marine resource development is to disasters such as the oil spill As well as being an efficient way of utilizing the local marine environment, the mariculture techniques that will be utilized in this project will allow steps to be taken to protect the shellfish that are under culture from the effects of disasters such as EVOS Such steps could include moving the shellfish to a safe area or sinking them in subtidal water

The project is designed to provide a long term source of income and subsistence food It will provide a means for the villagers to maintain their traditional lifestyle in the face of increased and sometimes conflicting use of the area of the Chugach region The project has already gone through feasibility testing and is designed to will become self sufficient after the development stage which will take the next four years Development will consist of purchase and installation of seed and equipment, training interested villagers in mariculture techniques and setting up a management structure in each village to take over the project after the development stage

## HOW

The basic strategy for the village mariculture projects will be to concentrate initially on oyster culture The reason is that oyster seed is readily available for culturing, there is a good market for oysters grown in Alaska and oysters have proven to be an acceptable substitute for local shellfish species (oysters are not indigenous to Alaska) for subsistence use The objective will be to set up a mariculture operation in each village that will produce about 650,000 marketable oysters per year

The feasibility of establishing mariculture projects in the Native villages of the Chugach Region has been tested extensively at both Tatitlek and Chenega Bay As mentioned, both these villages have established

mariculture feasibility operations with very encouraging results In addition, data collected from the Port Graham/Nanwalek (English Bay) area and from potential sites in the vicinity of Eyak suggest the mariculture would be successful in these areas as well

For those villages that already have permitted mariculture areas the procedure will be to establish new oyster culture operations or increase existing operations to commercial production levels A mariculture specialist will be retained to organize the operations in these villages, help put together village crews for training and initiate a training program that will run concurrently with the development of the mariculture operations Mariculture development plans, required as part of the permitting process, will be followed in setting up and developing the culture sites

For those villagers without permitted sites, initial efforts will concentrate on locating suitable sites and submitting permit applications Criteria used for locating sites will include the presence of residual oil, the amount of tidal flow, level of protection from adverse weather, upland ownership and ease of access from the village It may be that for some reason it is determined that mariculture is not practical or feasible for a particular village at this time In this case the village will be dropped from the project

In addition to oysters, there is good potential for the culture of clams and scallops as well as the availability of good markets for these products Clams and scallops are also important for subsistence use It is hoped that this project can investigate the potential for clam and scallop mariculture on the Chugach region However, before that can be undertaken a reliable source of clam and scallop seed needs to be established

The bulk of the cost for this project will go to training village residents in mariculture and in establishing a management structure for each village In order to have an effective program it will be necessary to maintain these aspects of the project Some cost savings could be realized by reducing the amount of seed and culture equipment However, this would results in village projects with inefficient levels of production Obviously, reducing the scope of the project to include fewer villages would reduce the cost It would be possible to reduce the overall cost of the project by up to 50% and still maintain some level of long term benefit

## ENVIRONMENTAL COMPLIANCE

To obtain a permit a mariculture site must meet the criteria set forth in the Corps of Engineers general permit for mariculture projects in Alaska (GP 91-7) They must also be in compliance with the local coastal zone management plan An environmental impact analysis has not been necessary for permitted mariculture sites

## WHEN

For villages without permitted mariculture sites Identify suitable sites - prior to March 30 of year one, Apply for mariculture permits - March and April of year one, obtain permits - March of year two

For villages with permitted sites First year Organize village crew, set up training schedule and initiate training - January, Order culture equipment and seed - January, Install culture equipment and seed - March through June, initiate ongoing maintenance schedule for mariculture operations - March, Continue training and maintenance - ongoing Second Year Training and maintenance - ongoing, Order new seed - January, Install new seed - March through June, Sort out market sized oysters from first year seed and place in intertidal hardening area - ongoing after July, Begin to market oysters - ongoing after mid August The remaining years off the project will concentrate on increasing production efficiency in order to bring each village operation to the 650,000 marketable oyster per year level, and to increase marketing effort and improve transport

EXXON VALDEZ TRUSTEE COUNCIL

Project Description One ADF&G staff person will be hired to work with the contractors during this feasibility study to insure project compliance A contract will be let to a mariculture consultant to initiate training programs in at least 3 native villages ($45K) This will work in concert with the overall contractor hired to accomplish the overall analysis and project feasibility studies ($130K) Budgets for subsequent project years will not be developed until the feasibility analysis is completed

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $38 6 | $38 6 | | | | | |
| Travel | $0 0 | $5 0 | $5 0 | | | | | |
| Contractual | $0 0 | $192 0 | $192 0 | | | | | |
| Commodities | $0 0 | $2 0 | $2 0 | | | | | |
| Equipment | $0 0 | $0 0 | $0 0 | | | | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | | | | | |
| Sub-total | $0 0 | $237 6 | $237 6 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | $19 2 | $19 2 | | | | | |
| Project Total | $0 0 | $256 8 | $256 8 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 8 | 0 8 | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| FWT III | 9 | $31 1 |
| Program Manager | 1 | $7 5 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

** If not funded in FY 94, no closeout cost are anticipated

17 Jul 92

1993

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Project Number 93-019
Project Title Native Village Aquatic Farms
Agency ADF&G

FORM 2A
PROJECT
DETAIL

| | |
|---|---|
| **Travel** | Commercial airlines in-state travel (5K) |
| **Contractual** | Air charter, equipment rentals, mariculture consultant, feasibility consultant, and misc expenses |
| **Commodities** | Project supplies |
| **Equipment** | None |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-020

**Project Source**

**Project Title** Bivalve Shellfish Hatchery and Research Center

**Project Category** Restoration manipulation and/or enhancement

**Project Type** Bivalve shellfish

**Lead Agency** Alaska Department of Fish and Game

**Cooperating Agencies**

| **Project Term** | **Start Date** (day/month/year) | **Finish Date** (day/month/year) |
|---|---|---|
| | 01/01/93 | 09/30/93 (feasibility study) |

## INTRODUCTION

Background Shellfish resources in the spill-affected area were impacted in several ways Most obviously, shellfish populations were damaged, destroyed and/or contaminated by the spill and/or subsequent cleaning activities

Summary of the Injury Some bivalve shellfish populations were destroyed directly by the toxic effects of the spilled oil Other populations were severely reduced and in some cases completely destroyed by subsequent cleaning practices Still other populations were contaminated or were suspected to be contaminated to the degree that they were unfit for human consumption and/or were negatively affecting birds, mammals and other animals that fed upon those shellfish Evidence indicates that natural cleansing is not proceeding well in some areas The sheltered habitats most hospitable to shellfish were also those most protected from natural cleansing action Oil spill residues continue to persist in these areas Recent evidence indicates that these residues may persist for twenty years or more (National Oceanic and Atmospheric Administration) These shellfish will continue to be unsuitable for human consumption and will continue to enter the food chain affecting birds, mammals and other consumers Shellfish also tend to bio-accumulate toxic contaminants, making them suspect for consumption as long as spill residues remain

The economies of native communities in the oil-impacted area were altered by the Exxon Valdez Oil Spill The villages in the oil-impacted area suffered a "boom and bust" cycle following the spill Prior to the EVOS at least one mariculture feasibility study was under way (near Chenega Bay Village) This was terminated because of the spill Economic restoration, and/or replacement opportunities are reasonable expectations for impacted villages

Location The project involves two physical facilities The proposed location for these facilities is n Seward, Alaska A component of this study is to determine if that is the best location Target ocations for projects resulting from the operation of these facilities include Tatitlek, Chenega Bay, Eyak, Port Graham and Nanwalek

## WHAT

Goal The goal of this project is to assess the feasibility of using aquatic farming technology to restore, replace or enhance bivalve shellfish populations in oil affected areas and to mitigate the negative affects of the Exxon Valdez Oil Spill on native communities

Objectives The initial objectives of the project are to assess the feasiblility of a shellfish production hatchery and a mariculture technical center to be used to restore, replace and/or enhance bivalve shellfish populations in oil-impacted areas and to provide the necessary infrastructure to allow development of an aquatic farming industry in affected native communities A report on the feasibility of the proposed facilities relative to potential uses will be generated from data collected during the year Alternative configurations will be considered and analyzed This initial study will also attempt to identify potential species and establish production goals for those species

The feasibility of possible projects, such as the one proposed to enhance local clam populations for subsistence and commercial uses will be assessed during the budget year

Native communities and organizations in the affected area would be involved from the outset in development of this project Pending the results of the feasibility analysis, they would be the logical entity to operate the production shellfish hatchery

If full funding for construction of the facilities is not realized from oil spill funds, additional funding sources will be required before they can be built Though this would not affect the stated objectives, t would alter the project time frames and facility priorities

## WHY

Benefit to Injured Resources/Services Bivalve shellfish populations were severely impacted by the oil spill and by the cleanup efforts following All of the affected populations were used to some degree by marine mammals, birds, fishes and in many cases for human subsistence This project would provide the facilities and infrastructure to research techniques to restore, replace and/or enhance affected populations using shellfish hatchery and aquatic farm-based technology

The economies and life styles of many native communities were affected by the oil spill This project would also provide several critical components of an aquatic farming industry for those communities This industry would meld in well with established life styles, adding economic stability to the area without significant alteration of village social infrastructures or removal of natural resources

**HOW .**

Methodology Utilizing concepts already developed for the Seward shellfish hatchery and the ADF&G Mariculture Technical Center, a feasibility analysis of the project will be conducted Engineering and biological expertise will be retained to conduct the analysis If construction funds are later approved, direct restoration, replacement and/or enhancement of bivalve shellfish will be accomplished via an on-shore production hatchery operated by the private sector using technology developed at a State operated research center The production hatchery will also provide seedstock for aquatic farming projects initiated by oil impacted native communities The combination of the two facilities is necessary to accomplish the overall production objectives of this project because of the lack of technology for indigenous species

Analysis of similar projects in other areas will be conducted The information will be incorporated into the project design

Evaluation and feasibility determinations of potential projects for restoration, replacement or enhancement of bivalve shellfish in more remote areas, but of import to marine mammals, birds and fish will also be accomplished

Coordination

During the process of needs assessment and feasibility analysis, necessary coordination of efforts needs will also be determined and analyzed At this time ADF&G is aware of efforts by Alaska native roups to establish a shellfish hatchery and an aquatic farm industry in the oil-affected area This roject is supportive of and will be coordinated with those efforts to insure maximum efficiency and utility

**ENVIRONMENTAL COMPLIANCE**

Project compliance with the National Environmental Policy Act (NEPA) will be assessed during the feasibility phase Until project design and specifications are finalized, specific NEPA requirements cannot be determined Aquatic farms are addressed under a Corps of Engineers general permit (GP 91-7) If facilities are constructed a determination of compliance with the Alaska Coastal Management Plan (ACMP) will be required The required State and Federal permits will be identified and incorporated into the project planning process

**WHEN**

The feasibility study will occur this budget year (1/1/93 - 9/30/93) The clam restoration/enhancement demonstration project will occur next budget year

If the project is determined to be feasible and appropriate budgets realized, construction of the facilities will begin in 1993 (Oil Year 6) The facilities will be operational in 1994

EXXON VALDEZ TRUSTEE COUNCIL

Project Description This budget covers only a project feasibility analysis for FY 93 If the results are positive, a project plan for development of the facilities will be submitted The estimated cost of the shellfish hatchery is $1 3 million with an annual operating budget of $350K The Mariculture Technical Center is expected to cost $1 8 million with an annual operating budget of $254K EVOS funding sources may or may not be used for total construction costs

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Mar-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $37 6 | $37 6 | | | | | |
| Travel | $0 0 | $8 0 | $8 0 | | | | | |
| Contractual | $0 0 | $2 0 | $2 0 | | | | | |
| Commodities | $0 0 | $2 4 | $2 4 | | | | | |
| Equipment | $0 0 | $0 0 | $0 0 | | | | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | | | | | |
| Sub-total | $0 0 | $50 0 | $50 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | $5 7 | $5 7 | | | | | |
| Project Total | $0 0 | $55 7 | $55 7 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | 0 7 | | | | | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Biologist II | 1 | $26 5 | |
| Engineer | 1 | $6 5 | ** If not funded in FY 94, no closeout costs are anticipated |
| Draftsperson | 1 | $4 7 | |

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

17 Jul 92

**1993**



Project Number 93-020
Project Title Bivalve Shellfish Hatchery and Research Center
Agency ADF&G

FORM 2A
PROJECT
DETAIL

| | |
|---|---|
| **Travel** | Point to point, commercial airlines, in and out of state ($8 0K) |
| **Contractual** | Includes air charter, rentals, misc expenses ($2 0K) |
| **Commodities** | Project supplies ($2 4K) |
| **Equipment** | None |

# *EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION*

**ject Number:** 93-022 and 049

**Project Source:**

**Project Title:** Evaluating the feasibility of enhancing productivity of murres by using decoys, dummy eggs, and recordings of murre calls to simulate normal densities at breeding colonies affected by the *Exxon Valdez* oil spill, and monitoring the recovery of murres in the Barren Islands

**Project Category:** Manipulation and Enhancement; Restoration Monitoring

**Project Type:** Birds

**Lead Agency:** U.S. Fish and Wildlife Service

**Cooperating Agencies:** None

**Project Term:** **Start Date:** 1 January 1993 **Finish Date:** 31 December 1993

---

**INTRODUCTION:**

Background on the Resource/Service.--Murres were the species of higher vertebrates most heavily affected by the oil from the *Exxon Valdez* spill. These diving seabirds have continued to demonstrate abnormal breeding behavior and low reproductive output at several sites since the spill. Factors that normally result in increased breeding success of common murres are breeding in high-density concentrations and laying eggs in synchrony with neighbors. Being one of a crowd apparently reduces vulnerability to avian predators. Within a colony, birds in groups that breed early tend to be more productive than birds breeding later, and older birds tend to breed earlier and be more successful than young birds. Prior to laying, murres tend to be flighty. In cases where a small percentage of murres in a cluster have begun to incubate before others have laid, incubators tend to leave their eggs exposed to predators, joining the flock when panic flights occur. Nevertheless, as more birds lay there is a tendency for incubators, now apparently feeling safer with company, to remain with eggs when non breeders flush.

For reasons not yet fully understood, murres at colonies affected by the oil have not yet resumed normal breeding schedules. Apparently a relatively small proportion of birds have laid their eggs earlier than others, and egg predation by gulls has been high. Perhaps a substantial proportion of experienced breeders was killed in the spill so that the population now is composed of mostly young, inexperienced breeders. It is not well understood how crucial the presence of older birds is to the social facilitation of normal breeding, and it is possible that a shortage of experienced breeders is causing the abnormal timing and poor reproductive success. Another contributing factor could be reduced breeding densities, since populations were reduced by mortality of adults. The use of tape recorded murre calls, placement of decoys and dummy eggs could stimulate more normal breeding behavior.

Summary of Injury.--Over 100,000 murres were killed by the oil, and counts of birds at colonies within the trajectory of the oil indicated reduced populations after the spill. In the 3 years following the spill, remaining murres at colonies affected by the oil have initiated laying up to 1 month late, if they laid at all, and reproductive output has remained much lower than would be expected. Three consecutive years of poor reproductive success is very unusual based upon other studies.

ation --Experiments would be conducted at murre colonies in the Barren Islands, located between the Kenai Peninsula and the Kodiak Archipelago

WHAT

Goal --The purpose of this project is to evaluate the feasibility of using artificial means to stimulate normal breeding behavior, as measured by nesting chronology and success, in murres at colonies affected by the oil spill

Objectives --

1 Determine the feasibility of enhancing the breeding success of murres by using decoys, dummy eggs, and recorded murre calls

2 Monitor the recovery of murres in the Barren Islands

**WHY**

Benefit to Injured Resources/Services --If murres can be induced to resume nesting at normal dates and if predation were reduced, reproductive success should increase Increased recruitment from birds produced at injured colonies is likely to provide the best opportunity for populations to recover from reductions caused by the *Exxon Valdez* oil spill Pioneering from other colonies outside the spill area is not likely to contribute in a major way in the near future since murres exhibit a high tendency to return their natal colonies to breed, especially if there are available nest sites There would be available nest ..es at colonies with reduced populations The monitoring phase is essential to understand the results of the feasibility study and to assess the recovery of the colony as a whole following the oil spill The underlying causes of the abnormal nesting behavior (e g , delayed laying) are not yet understood, and monitoring data will provide the basis for testing various hypotheses Understanding the impact of the oil spill may make it possible to minimize damage in future spills by directing clean up efforts appropriately Moreover, documentation of the response of murres in the aftermath of the oil spill will provide a basis for predicting the extent of the injury from future spill

Relationship to Restoration Goals --This project meets the Trustee Council goal of restoring the spill area to its pre-spill condition by providing information that could be used to develop a management action If one or more of the experimental treatments proves to be feasible, it should be possible to implement the technique extensively enough to generate improved success for a portion of one or more colonies At least for these portions, more young should be produced and ultimately begin the process of recovery to former population levels

**HOW**

Methodology --Treatment and control plots would be selected at East Amatuli Light Rock and on Nord ,land in the Barrens Decoys, and solar powered sound players would be placed in selected locations rior to the arrival of murres on cliffs It would be necessary to use technical climbing gear to

complish the objective on Nord Island Time-lapse cameras would be used to monitor plots on E Amatuli Rock because access after murres have laid would disturb the birds

Coordination with Other Efforts --The two subprojects included here are complimentary Data from the monitoring program will be used assess the effectiveness of this project, and a single project leader would guide both projects

**ENVIRONMENTAL COMPLIANCE**

This is a non intrusive project which appears to qualify for categorical exemption under NEPA

**WHEN**

| | |
|---|---|
| Jan -Apr 1993 | Plan and arrange logistics (e g , boat charters), recruit seasonal employees, develop detailed study protocols, assemble field gear, purchase equipment |
| May 1993 | Place decoys, players, dummy eggs, and time-lapse cameras in field |
| Jun -Aug 1993 | Conduct field studies |
| Sep -Oct 1993 | Analyze data |
| Nov -Dec 1993 | Write progress report |
| Dec 15, 1993 | Submit progress report |

Project Description  This project is composed of two sub–projects  A) a pilot study to test the feasibility of using decoys, dummy eggs, and call playbacks to enhance murre productivity, and B) a monitoring program to evaluate recovery of murres at colonies affected by oil  In 1993 only the Barren Islands would be monitored, but every 5 years all sites would be checked

| Budget Category | Approved 01–Oct–92 28–Feb–93 | Proposed* 01–Mar–93 30–Sep–93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 84 5 | 84 5 | 119 5 | | | | |
| Travel | | 9 0 | 9 0 | 11 0 | | | | |
| Contractual | | 126 0 | 126 0 | 126 0 | | | | |
| Commodities | | 15 0 | 15 0 | 15 0 | | | | |
| Equipment | | 25 0 | 25 0 | 25 0 | | | | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | | | | |
| Sub–total | 0 0 | 259 5 | 259 5 | 296 5 | 0 0 | 0 0 | 0 0 | 0 0 |
| General Administration | | 21 5 | 21 5 | 26 7 | | | | |
| Project Total | 0 0 | 281 0 | 281 0 | 323 2 | 187 5 | 338 7 | 0 0 | 0 0 |
| Full–time Equivalents (FTE) | | 2 2 | 2 2 | | | | | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Project leader | 9 | 38,000 | |
| Biological technician (3) | 13 | 26,500 | |
| Wildlife biologist | 2 | 8,000 | |
| Program manager | 2 4 | 12,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year  This new project also includes proposed funding for January and February, 1993

**The toal shown in FY 94 to closeout work started in FY 93 is $21 9

17–Jul–92



Project Number 93–022
Project Title Murre decoy feasibility/monitoring
Agency US Fish & Wildlife Service

FORM 2A PROJECT DETAIL

File Name MURFEA2A  Revised 24–Aug–92

| | |
|---|---|
| Travel | See sub–project detail |
| Contractual | See sub–project detail |
| Commodities | See sub–project detail |
| Equipment | See sub–project detail |

| Project Description | Conduct a pilot feasibility study to evaluate decoys, dummy eggs, and playbacks of murre calls to enhance murre productivity |
|---|---|

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 22 0 | 22 0 | 30 0 | | | | |
| Travel | | 5 0 | 5 0 | 5 0 | | | | |
| Contractual | | 50 0 | 50 0 | 50 0 | | | | |
| Commodities | | 5 0 | 5 0 | 5 0 | | | | |
| Equipment | | 15 0 | 15 0 | 15 0 | | | | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | | | | |
| Sub-total | 0 0 | 97 0 | 97 0 | 105 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| General Administration | | 6 8 | 6 8 | 8 0 | | | | |
| Project Total | 0 0 | 103 8 | 103 8 | 113 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| Full-time Equivalents (FTE) | | 0 7 | 0 7 | | | | | |
| | | | | | Amounts are shown in thousands of dollars | | | |

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Project leader | (-9) | (38,000) | (Non-add covered by monitoring proj) |
| Biological technician | 6 | 12,000 | |
| Wildlife biologist | 1 | 4,000 | |
| Project manager | 1 2 | 6,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

**The total shown in FY 94 to closeout work started in FY 93 is $5 5

7-Jul-92

1993



| | |
|---|---|
| Project Number | 93-022 |
| Project Title | Murre decoy feasibility/monitoring |
| Sub-Project | Murre decoy feasibility |
| Agency | US Fish & Wildlife Service |

FORM 3A SUB-PROJECT DETAIL

Filename MURDEC3A Revised 24-Aug-92

| | |
|---|---|
| Travel | Project leader will need to travel to meetings, also a Service climber would travel from Juneau to the Barren Islands to install decoys and recorders |
| Contractual | We would hire a consultant on statistical design to help plan how to rigorously test the effectiveness of decoys and playback We would also charter a helicopter to travel to the Barren Islands at appropriate times |
| Commodities | There would probably be a camp on E Amatuli, in the Barrens, and they would need food, fuel, and minor equipment |
| Equipment | Time–lapse cameras and tape players would need to be purchased and enclosed in specially designed waterproof boxes Solar panels would need to be purchased to keep batteries charged |

| Project Description | Monitoring the recovery of murre colonies This project will focus on the Barren Islands annually and every 5 years (next in 1996), all sites affected would be monitored to evaluate recovery At the end of FY 96 an evaluation would be made to determine whether the project needs to continue |
|---|---|

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 62 5 | 62 5 | 89 5 | 76 0 | 127 0 | | |
| Travel | | 4 0 | 4 0 | 6 0 | 5 0 | 10 0 | | |
| Contractual | | 76 0 | 76 0 | 76 0 | 76 0 | 124 0 | | |
| Commodities | | 10 0 | 10 0 | 10 0 | 10 0 | 35 0 | | |
| Equipment | | 10 0 | 10 0 | 10 0 | 10 0 | 15 0 | | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | | |
| Sub-total | 0 0 | 162 5 | 162 5 | 191 5 | 177 0 | 311 0 | 0 0 | 0 0 |
| General Administration | | 14 7 | 14 7 | 18 7 | 10 5 | 27 7 | | |
| Project Total | 0 0 | 177 2 | 177 2 | 210 2 | 187 5 | 338 7 | 0 0 | 0 0 |
| Full-time Equivalents (FTE) | | 1 5 | 1 5 | | | | | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Project leader GS11 | 9 | 38,000 | Project leader for all of 93-022 |
| Biological technician (2) | 7 | 14,500 | Biotechs will also help with all of 93-022 |
| Wildlife biologist GS12 | 1 | 4,000 | Coordinate project |
| Program manager, Anchorage | 1 2 | 6,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

**The total shown in FY94 to closeout work started in FY 93 is $16 4

7-Jul-92

| 1993 |
|---|



| Project Number | 93-022 |
|---|---|
| Project Title | Murre decoy feasibility/monitoring |
| Sub-Project | Monitor murre colony recovery |
| Agency | US Fish & Wildlife Service |

**FORM 3A SUB-PROJECT DETAIL**

Filename MURCOL3A Revised 24-Aug-92

| | |
|---|---|
| Travel | For attendance of meetings and transportation to study locations |
| Contractual | There would be two types of contracts (1) statistical consulting during analysis of data, (2) boat charters to get crews to study sites and to directly support population work |
| Commodities | Food, fuel and supplies for field camps are included here |
| Equipment | Replacements for weather ports and other camp equipment will be needed |

# *EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION*

**)ject Number** 93-022, 93-049

**Project Source**

**Project Title** Evaluating the feasibility of enhancing productivity of murres by using decoys, dummy eggs, and recordings of murre calls to simulate normal densities at breeding colonies affected by the *Exxon Valdez* oil spill, and monitoring the recovery of murres in the Barren Islands

**Project Category** Manipulation and Enhancement, Restoration Monitoring

**Project Type** Birds

**Lead Agency** U S Fish and Wildlife Service

**Cooperating Agencies** None

**Project Term** **Start Date** 1 January 1993 **Finish Date** 31 December 1993

## INTRODUCTION

Background on the Resource/Service --Murres were the species of higher vertebrates most heavily affected by the oil from the *Exxon Valdez* spill These diving seabirds have continued to demonstrate abnormal breeding behavior and low reproductive output at several sites since the spill Factors that normally result in increased breeding success of common murres are breeding in high-density concentrations and laying eggs in synchrony with neighbors Being one of a crowd apparently reduces vulnerability to avian predators Within a colony, birds in groups that breed early tend to be more productive than birds breeding later, and older birds tend to breed earlier and be more successful than young birds Prior to laying, murres tend to be flighty In cases where a small percentage of murres in a cluster have begun to incubate before others have laid, incubators tend to leave their eggs exposed to predators, joining the flock when panic flights occur Nevertheless, as more birds lay there is a tendency for incubators, now apparently feeling safer with company, to remain with eggs when non breeders flush

For reasons not yet fully understood, murres at colonies affected by the oil have not yet resumed normal breeding schedules Apparently a relatively small proportion of birds have laid their eggs earlier than others, and egg predation by gulls has been high Perhaps a substantial proportion of experienced breeders was killed in the spill so that the population now is composed of mostly young, inexperienced breeders It is not well understood how crucial the presence of older birds is to the social facilitation of normal breeding, and it is possible that a shortage of experienced breeders is causing the abnormal timing and poor reproductive success Another contributing factor could be reduced breeding densities, since populations were reduced by mortality of adults The use of tape recorded murre calls, placement of decoys and dummy eggs could stimulate more normal breeding behavior

Summary of Injury --Over 100,000 murres were killed by the oil, and counts of birds at colonies within the trajectory of the oil indicated reduced populations after the spill In the 3 years following the spill, remaining murres at colonies affected by the oil have initiated laying up to 1 month late, if they laid at all, and reproductive output has remained much lower than would be expected Three consecutive years of poor reproductive success is very unusual based upon other studies

Location --Experiments would be conducted at murre colonies in the Barren Islands, located between the nai Peninsula and the Kodiak Archipelago

WHAT

Goal --The purpose of this project is to evaluate the feasibility of using artificial means to stimulate normal breeding behavior, as measured by nesting chronology and success, in murres at colonies affected by the oil spill

Objectives --

1 Determine the feasibility of enhancing the breeding success of murres by using decoys, dummy eggs, and recorded murre calls

2 Monitor the recovery of murres in the Barren Islands

**WHY**

Benefit to Injured Resources/Services --If murres can be induced to resume nesting at normal dates and if predation were reduced, reproductive success should increase Increased recruitment from birds produced at injured colonies is likely to provide the best opportunity for populations to recover from reductions caused by the *Exxon Valdez* oil spill Pioneering from other colonies outside the spill area is not likely to contribute in a major way in the near future since murres exhibit a high tendency to return to their natal colonies to breed, especially if there are available nest sites There would be available nest sites at colonies with reduced populations The monitoring phase is essential to understand the results of ie feasibility study and to assess the recovery of the colony as a whole following the oil spill The nderlying causes of the abnormal nesting behavior (e g , delayed laying) are not yet understood, and monitoring data will provide the basis for testing various hypotheses Understanding the impact of the oil spill may make it possible to minimize damage in future spills by directing clean up efforts appropriately Moreover, documentation of the response of murres in the aftermath of the oil spill will provide a basis for predicting the extent of the injury from future spill

Relationship to Restoration Goals --This project meets the Trustee Council goal of restoring the spill area to its pre-spill condition by providing information that could be used to develop a management action If one or more of the experimental treatments proves to be feasible, it should be possible to implement the technique extensively enough to generate improved success for a portion of one or more colonies At least for these portions, more young should be produced and ultimately begin the process of recovery to former population levels

**HOW**

Methodology --Treatment and control plots would be selected at East Amatuli Light Rock and on Nord Island in the Barrens Decoys, and solar powered sound players would be placed in selected locations prior to the arrival of murres on cliffs It would be necessary to use technical climbing gear to accomplish the objective on Nord Island Time-lapse cameras would be used to monitor plots on E Amatuli Rock because access after murres have laid would disturb the birds

Coordination with Other Efforts --The two subprojects included here are complimentary Data from the ıonitoring program will be used assess the effectiveness of this project, and a single project leader ıuld guide both projects

**ENVIRONMENTAL COMPLIANCE**

This is a non intrusive project which appears to qualify for categorical exemption under NEPA

**WHEN**

| | |
|---|---|
| Jan -Apr 1993 | Plan and arrange logistics (e g , boat charters), recruit seasonal employees, develop detailed study protocols, assemble field gear, purchase equipment |
| May 1993 | Place decoys, players, dummy eggs, and time-lapse cameras in field |
| Jun -Aug 1993 | Conduct field studies |
| Sep -Oct 1993 | Analyze data |
| Nov -Dec 1993 | Write progress report |
| Dec 15, 1993 | Submit progress report |

Project Description This project is composed of two sub–projects A) a pilot study to test the feasibility of using decoys, dummy eggs, and call playbacks to enhance murre productivity, and B) a monitoring program to evaluate recovery of murres at colonies affected by oil In 1993 only the Barren Islands would be monitored, but every 5 years all sites would be checked

| Budget Category | Approved 01–Oct–92 28–Feb–93 | Proposed* 01–Mar–93 30–Sep–93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 84 5 | 84 5 | 119 5 | | | | |
| Travel | | 9 0 | 9 0 | 11 0 | | | | |
| Contractual | | 126 0 | 126 0 | 126 0 | | | | |
| Commodities | | 15 0 | 15 0 | 15 0 | | | | |
| Equipment | | 25 0 | 25 0 | 25 0 | | | | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | | | | |
| Sub–total | 0 0 | 259 5 | 259 5 | 296 5 | 0 0 | 0 0 | 0 0 | 0 0 |
| General Administration | | 21 5 | 21 5 | 26 7 | | | | |
| Project Total | 0 0 | 281 0 | 281 0 | 323 2 | 187 5 | 338 7 | 0 0 | 0 0 |
| Full–time Equivalents (FTE) | | 2 2 | 2 2 | | | | | |

Amounts are shown in thousands of dollars

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Project leader | 9 | 38,000 | |
| Biological technician (3) | 13 | 26,500 | |
| Wildlife biologist | 2 | 8,000 | |
| Program manager | 2 4 | 12,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

**The toal shown in FY 94 to closeout work started in FY 93 is $21 9

17–Jul–92



Project Number 93–022/93–049
Project Title Murre decoy feasibility/monitoring
Agency US Fish & Wildlife Service

FORM 2A PROJECT DETAIL

File Name MURFEA2A Revised 25–Aug–92

| | |
|---|---|
| Travel | See sub-project detail |
| Contractual | See sub-project detail |
| Commodities | See sub-project detail |
| Equipment | See sub-project detail |

| Project Description | Conduct a pilot feasibility study to evaluate decoys, dummy eggs, and playbacks of murre calls to enhance murre productivity |
|---|---|

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 22 0 | 22 0 | 30 0 | | | | |
| Travel | | 5 0 | 5 0 | 5 0 | | | | |
| Contractual | | 50 0 | 50 0 | 50 0 | | | | |
| Commodities | | 5 0 | 5 0 | 5 0 | | | | |
| Equipment | | 15 0 | 15 0 | 15 0 | | | | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | | | | |
| Sub-total | 0 0 | 97 0 | 97 0 | 105 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| General Administration | | 6 8 | 6 8 | 8 0 | | | | |
| Project Total | 0 0 | 103 8 | 103 8 | 113 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| Full-time Equivalents (FTE) | | 0 7 | 0 7 | | | | | |
| | | | | | Amounts are shown in thousands of dollars | | | |

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Project leader | | | Costs covered in sub-project 93-049 |
| Biological technician | 6 | 12,000 | |
| Wildlife biologist | 1 | 4,000 | |
| Project manager | 1 2 | 6,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

**The total shown in FY 94 to closeout work started in FY 93 is $5 5

7-Jul-92

| 1993 |
|---|



| Project Number | 93-022 |
|---|---|
| Project Title | Murre decoy feasibility/monitoring |
| Sub-Project | Murre decoy feasibility |
| Agency | US Fish & Wildlife Service |

**FORM 3A SUB-PROJECT DETAIL**

Filename MURDEC3A Revised 25-Aug-92

EXXON VALDEZ TRUSTEE COUNCIL

Project Description: Conduct a pilot feasibility study to evaluate decoys, dummy eggs, and playbacks of murre calls to enhance murre productivity

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 22.0 | 22.0 | 30.0 | | | | |
| Travel | | 5.0 | 5.0 | 5.0 | | | | |
| Contractual | | 50.0 | 50.0 | 50.0 | | | | |
| Commodities | | 5.0 | 5.0 | 5.0 | | | | |
| Equipment | | 15.0 | 15.0 | 15.0 | | | | |
| Capital Outlay | | 0.0 | 0.0 | 0.0 | | | | |
| Sub-total | 0.0 | 97.0 | 97.0 | 105.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| General Administration | | 6.8 | 6.8 | 8.0 | | | | |
| Project Total | 0.0 | 103.8 | 103.8 | 113.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Full-time Equivalents (FTE) | | 0.7 | 0.7 | | | | | |

Amounts are shown in thousands of dollars.

Budget Year Proposed Personnel:

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Project leader | ~~(.9)~~ | ~~(38,000)~~ | ~~Non-add covered by monitoring proj.~~ (costs covered in subproject 93-049) |
| Biological technician | 6 | 12,000 | |
| Wildlife biologist | 1 | 4,000 | |
| Project manager | 1.2 | 6,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year. This new project also includes proposed funding for January and February, 1993.
**The total shown in FY 94 to closeout work started in FY 93 is $5.5.

7-Jul-92

1993



Project Number: 93-022
Project Title: Murre decoy feasibility/monitoring
Sub-Project: Murre decoy feasibility
Agency: US Fish & Wildlife Service

FORM 3A SUB-PROJECT DETAIL

Filename: MURDEC3A Revised: 25-Aug-92

| Project Description | Monitoring the recovery of murre colonies This project will focus on the Barren Islands annually and every 5 years (next in 1996), all sites affected would be monitored to evaluate recovery At the end of FY 96 an evaluation would be made to determine whether the project needs to continue |
|---|---|

| Budget Category | Approved 01-Oct-92 28-Feb-93 | Proposed* 01-Mar-93 30-Sep-93 | Total FY 93 | FY 94** | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | | 62 5 | 62 5 | 89 5 | 76 0 | 127 0 | | |
| Travel | | 4 0 | 4 0 | 6 0 | 5 0 | 10 0 | | |
| Contractual | | 76 0 | 76 0 | 76 0 | 76 0 | 124 0 | | |
| Commodities | | 10 0 | 10 0 | 10 0 | 10 0 | 35 0 | | |
| Equipment | | 10 0 | 10 0 | 10 0 | 10 0 | 15 0 | | |
| Capital Outlay | | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | | |
| Sub-total | 0 0 | 162 5 | 162 5 | 191 5 | 177 0 | 311 0 | 0 0 | 0 0 |
| General Administration | | 14 7 | 14 7 | 18 7 | 10 5 | 27 7 | | |
| Project Total | 0 0 | 177 2 | 177 2 | 210 2 | 187 5 | 338 7 | 0 0 | 0 0 |
| Full-time Equivalents (FTE) | | 1 5 | 1 5 | | | | | |
| | | | | | Amounts are shown in thousands of dollars | | | |

Budget Year Proposed Personnel

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Project leader GS11 | 9 | 38,000 | Project leader for all of 93-022 |
| Biological technician (2) | 7 | 14,500 | Biotechs will also help with all of 93-022 |
| Wildlife biologist GS12 | 1 | 4,000 | Coordinate project |
| Program manager, Anchorage | 1 2 | 6,000 | |

*FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

**The total shown in FY94 to closeout work started in FY 93 is $16 4

7-Jul-92

| 1993 |
|---|



| Project Number | 93-049 |
|---|---|
| Project Title | Murre decoy feasibility/monitoring |
| Sub-Project | Monitor murre colony recovery |
| Agency | US Fish & Wildlife Service |

**FORM 3A SUB-PROJECT DETAIL**

Filename MURCOL3A Revised 25-Aug-92

| | |
|---|---|
| Travel | For attendance of meetings and transportation to study locations |
| Contractual | There would be two types of contracts (1) statistical consulting during analysis of data, (2) boat charters to get crews to study sites and to directly support population work |
| Commodities | Food, fuel and supplies for field camps are included here |
| Equipment | Replacements for weather ports and other camp equipment will be needed |

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-024

**Project Source**

**Project Title** RESTORATION OF THE COGHILL LAKE SOCKEYE SALMON STOCK

**Project Category** Restoration manipulation and enhancement

**Lead Agency** Alaska Department of Fish and Game (ADFG)

**Cooperating Agencies** U S Forest Service (USFS)

**Project Term** **Start Date** 1/1/93 **Finish Date** 12/31/97

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**INTRODUCTION** This project will restore the natural productivity of Coghill Lake and the resident sockeye salmon (*Oncorhynchus nerka*) population through use of established lake fertilization techniques Coghill Lake is located on the eastern side of Port Wells in the northwest region of Prince William Sound (PWS) The Coghill Lake sockeye salmon stock historically supported important sport and commercial fisheries Returns have declined in recent years from a historical average of 250,000 to only 25,000 in 1991 Damage assessment studies on juvenile salmon suggest that the Exxon Valdez oil spill contributed to the decline of the Coghill sockeye stock Salmon migration patterns indicate that juvenile sockeye smolt from Coghill Lake likely migrated through oil-contaminated areas in western PWS Juvenile salmon similar in size to Coghill smolts utilized oiled nearshore nursery habitats The growth and survival of juvenile salmon utilizing these habitats was reduced by oil contamination from the Exxon Valdez spill The Coghill Lake stock is presently at dangerously low levels Action must be taken to restore the stock before any further decline occurs The communities of Anchorage, Whittier, Valdez, and Cordova will benefit from this project Coghill Lake sockeye have been heavily utilized by sport fishermen travelling from Whittier by boat and from Anchorage by air Commercial fishermen from all of these communities have historically fished the Coghill Lake sockeye salmon stock Restoration of Coghill Lake sockeye salmon will further improve management of important sockeye and chum salmon stocks returning to hatcheries in western PWS

**WHAT** The goal of this project is to restore the natural productivity of Coghill Lake and the resident sockeye salmon population through use of established lake fertilization techniques The USFS will apply fertilizer to the lake each summer for five years (the USFS has already purchased the fertilizer from another funding source) The ADFG will conduct limnological and fisheries studies needed to monitor and refine the fertilization program These studies will focus on the effects of fertilization on primary and secondary production and the growth and survival of juvenile sockeye salmon in the lake The ADFG component of the project will achieve the following objectives each year

1 determine the response of lake nutrient levels, primary and secondary production, and plankton species composition to lake fertilization,

2 monitor changes in water temperature, light penetration, and water level in the lake,

3 determine the habitats utilized by sockeye salmon fry at various lifestages,

determine if fry prey composition, growth, and overwinter survival changes in response to lake fertilization,

5 estimate the effect of fertilization on lake carrying capacity and smolt-to-adult survival, and

6 develop recommendations for refinement of the lake restoration program

**WHY** This project will restore an important natural resource and resource service in the Exxon Valdez oil-spill area Restoration of the Coghill sockeye stock will further provide natural resource services to replace those once provided by other injured stocks Damage assessment studies on juvenile salmon suggest that the Exxon Valdez oil spill may have contributed to the decline of the Coghill sockeye stock Lake fertilization techniques have been successfully applied in Alaska and elsewhere to restore the productivity of sockeye salmon rearing lakes The production of sockeye salmon populations is closely linked to the productivity of lakes where the fish rear for one to three years The availability of food in rearing lakes determines the growth and size of smolts that emigrate to sea Smolt size in turn determines ocean survival and subsequent adult returns The fry food resources in Coghill Lake are currently very low As a result, the lake cannot support large numbers of fry, and the smolts are very small Fertilization is needed to increase lake productivity and boost fry food abundance until natural nutrient input from salmon carcasses is restored

**HOW** Limnological sampling will be conducted twice each month at two stations Dissolved oxygen concentrations will be measured from the surface to a depth of 40 m Eight liter water samples will be collected from the 1m stratum, chemocline, and monimolimnion Replicate vertical zooplankton tows will be taken using a 153-µm mesh conical net Water samples will be analyzed for the following parameters conductivity, alkalinity, calcium, magnesium, turbidity, total iron, filterable reactive phosphorus, total phosphorus, nitrate and nitrite, total Kjeldahl nitrogen, total nitrogen, and reactive silicon Yearly phosphorus loading will be estimated Euphotic zone depth and algal standing crop will be estimated Zooplankton abundance will be estimated from triplicate counts of organisms in 1 ml subsamples Zooplankton dry weight and biomass will be estimated by regression analysis using body length measurements on 10 individuals from each taxa Light penetration will be measured at 1 m increments from the surface to a depth equivalent to 1% of the subsurface light Water temperature in the epilimnion and water level will be continuously monitored by electronic recorders moored at 5, 15, and 25 m depth

The habitats used by sockeye salmon fry in the lake will be determined from visual surveys, beach seine and tow net catches, and hydroacoustic surveys conducted in June, August, and October A 70-Khz echosounder will be used to determine the vertical distribution of fry in the lake during the day and at night Twenty samples (n=10) of ten sockeye salmon fry will be collected from various habitats during each survey for later analysis of stomach contents and otolith growth

Stomach analysis will be conducted on sockeye fry (n=200) collected during each survey Prey items in the stomach will be identified to the lowest possible taxonomic level Prey body weight will be estimated by regression analysis using body length measurements on 10 individuals from each taxa Stomach contents weight will be estimated by the product of abundance and mean body weight for each taxa Chi-square analysis will be used to test for differences (P= 05) in the proportion of stomach contents weight in each taxonomic group between three time periods Analysis of covariance will be used to test for differences (P= 05) in stomach contents weight between three time periods

ɔlith microstructure analysis will be conducted on sockeye fry (n=200) collected during each survey ın sections of the otoliths will be prepared using established methods A computer image analysis system will be used to collect data from the otoliths A modified Fraser-Lee back calculation procedure will be used to reconstruct fish growth histories during weekly time periods Weekly growth estimates obtained from otoliths will be regressed against weekly mean water temperatures obtained from electronic temperature recorders Analysis of covariance will be used to test for differences (P= 05) ın temperature-specific growth between Coghill Lake sockeye and fish fed an excess ration Comparison of regression slopes will be used to determine ıf fry growth ın Coghill Lake ıs limited by food abundance This ınformation will be used to monitor the growth response of the fish to fertilization and determine the carrying capacity of the lake

The overwinter survival of juvenile sockeye will be estimated from fall fry and spring smolt population estimates Fall fry population size will be estimated with a 120 Khz echosounder towed along 10 randomly selected transects A mid-water trawl will be used ın conjunction with the hydroacoustic surveys to determine species composition, age, and size of fish targets Sockeye salmon smolts emigrating from Coghill Lake will be enumerated using incline-plane traps The traps will be operated continuously from early May through June The catch efficiency of the traps will be determined by mark/recapture analysis Age composition and size will be estimated from a sample of 40 smolts collected each day Chi-square analysis and analysis of variance will be used to test for differences (P=0 05) ın age composition and smolt size between years, respectively A representative sample of smolts will be coded-wire tagged to enable later estimation of smolt-to-adult survival ın the commercial fishery The combined results from these ınvestigations will be compiled ın an annual report describing ıe success of the fertilization program and recommending refinements to the methodology

**ENVIRONMENTAL COMPLIANCE** An environmental assessment has been conducted to evaluate the various options for rehabilitating Coghill Lake and the resident sockeye salmon population The assessment has concluded that a program of lake fertilization ıs the most appropriate method for rehabilitation ın this case Final approval of the environmental assessment ıs expected before the end of 1992

**WHEN** This project will be conducted over a five year period which corresponds to the generation time for Coghill Lake sockeye salmon Lake fertilization ıs expected to elevate lake productivity until carcasses from adult spawners can once again contribute significantly to the nutrient load ın the lake Project activities will take place throughout each year (Table 1)

Table 1 Annual schedule of project activities (1993-1997)

| DATE | ACTIVITY |
|---|---|
| May - June | Enumerate outmigrant smolts and estimate smolt age and size |
| June - October | Apply fertilizer each week and conduct limnological sampling |
| June, Aug , Oct | Determine fish habitat use and sample for otolith and stomach analysis |
| October | Estimate fall fry population size using hydroacoustic techniques |
| June - October | Conduct laboratory analyses of limnological, otolith, and stomach samples |
| October-Dec | Analyze data and prepare annual report |

Project Description This project will restore the natural productivity of Coghill Lake and the resident sockeye salmon population through use of established lake fertilization techniques The ADF&G component of the project will focus on limnological and fisheries studies needed to monitor and refine the fertilization program The response of lake nutrient levels, primary and secondary production, and plankton species composition will be monitored The response of sockeye salmon fry growth, prey composition, and overwinter survival will be determined The results of the monitoring program will be used to estimate changes in lake carrying capacity and smolt- to-adult survival rates

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $114 9 | $114 9 | $114 9 | $114 9 | $114 9 | $114 9 | |
| Travel | $0 0 | $6 7 | $6 7 | $6 7 | $6 7 | $6 7 | $6 7 | |
| Contractual | $0 0 | $15 8 | $15 8 | $64 5 | $64 5 | $64 5 | $64 5 | |
| Commodities | $0 0 | $14 7 | $14 7 | $10 7 | $10 7 | $10 7 | $10 7 | |
| Equipment | $0 0 | $21 5 | $21 5 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Sub-total | $0 0 | $173 6 | $173 6 | $196 8 | $196 8 | $196 8 | $196 8 | $0 0 |
| General Administration | $0 0 | $18 2 | $18 2 | $20 8 | $20 8 | $20 8 | $20 8 | |
| Project Total | $0 0 | $191 8 | $191 8 | $217 6 | $217 6 | $217 6 | $217 6 | $0 0 |
| Full-time Equivalents (FTE) | 1 9 | | | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| Please refer to detailed budget sheets | | | * FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993<br><br>** If not funded in FY 94, $23 8K will be needed to retrieve field equipment and prepare a final report |

17 Jul 92

1993



Project Number 93-024
Project Title Restoration of Coghill Lake Sockeye Salmon Stock
Agency ADF&G & USFS

FORM 2A PROJECT DETAIL

Project Description This project will restore the natural productivity of Coghill Lake and the resident sockeye salmon population through use of established lake fertilization techniques The ADF&G component of the project will focus on limnological and fisheries studies needed to monitor and refine the fertilization program The response of lake nutrient levels, primary and secondary production, and plankton species composition will be monitored The response of sockeye salmon fry growth, prey composition, and overwinter survival will be determined The results of the monitoring program will be used to estimate changes in lake carrying capacity and smolt- to-adult survival rates

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $104 7 | $104 7 | $104 7 | $104 7 | $104 7 | $104 7 | |
| Travel | $0 0 | $1 3 | $1 3 | $1 3 | $1 3 | $1 3 | $1 3 | |
| Contractual | $0 0 | $8 8 | $8 8 | $14 5 | $14 5 | $14 5 | $14 5 | |
| Commodities | $0 0 | $14 0 | $14 0 | $10 0 | $10 0 | $10 0 | $10 0 | |
| Equipment | $0 0 | $21 5 | $21 5 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Sub-total | $0 0 | $150 3 | $150 3 | $130 5 | $130 5 | $130 5 | $130 5 | $0 0 |
| General Administration | $0 0 | $16 3 | $16 3 | $15 8 | $15 8 | $15 8 | $15 8 | |
| Project Total | $0 0 | $166 6 | $166 6 | $146 3 | $146 3 | $146 3 | $146 3 | $0 0 |
| Full-time Equivalents (FTE) | 0 0 | 1 9 | 1 9 | 2 1 | 2 1 | 2 1 | 2 1 | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| 1 Limnologist I | 1 | $4 5 |
| 4 FB I | 15 5 | $62 5 |
| 1 FT II | 5 | $15 3 |
| 1 Biom II | 2 | $10 4 |
| 1 A/P IV | 0 5 | $2 7 |
| 1 A/P II | 0 5 | $2 1 |
| 1 PS II | 0 5 | $2 2 |
| 1 Program Manager | 0 7 | $5 0 |

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February 1993

** If not funded in FY 94, $23 8K will be needed to remove field camps and prepare final report

17 Jul 92

**1993**



Project Number 93-024
Project Title Restoration of Coghill Lake Sockeye Salmon Stock
Agency ADF&G

FORM 3A PROJECT DETAIL

| | |
|---|---|
| **Travel** | Funds are requested for two round trips between Anchorage and Cordova to have biometric staff review data management staff travel from Juneau to Cordova/Anchorage to work with the project staff on development and maintenance of databases |
| **Contractual** | Funds are requested for thirteen air charter flights from Cordova to Coghill Lake Four trips will be needed to install and supply the smolt camp in the spring An additional nine flights will be needed to collect limnology and fish samples and conduct the fall hydroacoustic population estimate Additional contractual funds will be needed for analysis of the hydroacoustic data and software licensing and support |
| **Commodities** | Funds are requested for supplies (groceries, fuel, etc ) for the field crew at the spring smolt camp Additional supplies are needed for coded-wire tag application, collection of limnology and fish samples, sample preservation and shipping, and laboratory analysis of otolith and stomach samples A small mesh beach seine and tow net will be purchased to collect samples of juvenile sockeye salmon in the lake |
| **Equipment** | Funds are requested to purchase three electonic water temperature recorders, one electronic water level recorder, and one 120 KHz echosounder This equipment will be purchased the first year of the project and no further equipment purchases will be required in subsequent years |

Project Description The USFS component of the project will involve application of fertilizer to Coghill Lake each year Fertilizer will be applied from an airplane every two weeks throughout the summer

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $10 2 | $10 2 | 10 2 | 10 2 | 10 2 | 10 2 | 0 |
| Travel | $0 0 | $5 4 | $5 4 | 5 4 | 5 4 | 5 4 | 5 4 | 0 |
| Contractual | $0 0 | $7 0 | $7 0 | $50 0 | $50 0 | $50 0 | $50 0 | $0 0 |
| Commodities | $0 0 | $0 7 | $0 7 | 0 7 | 0 7 | 0 7 | 0 7 | 0 |
| Equipment | $0 0 | $0 0 | $0 0 | 0 | 0 | 0 | 0 | 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | 0 | 0 | 0 | 0 | 0 |
| Sub-total | $0 0 | $23 3 | $23 3 | $66 3 | $66 3 | $66 3 | $66 3 | $0 0 |
| General Administration | $0 0 | $2 0 | $2 0 | $5 0 | $5 0 | $5 0 | $5 0 | $0 0 |
| Project Total | $0 0 | $25 3 | $25 3 | $71 3 | $71 3 | $71 3 | $71 3 | $0 0 |
| Full-Time Equivalents (FTE) | | | | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| 1 Fishery Biologist | 1 | $5 6 | * FY 93 is a transition year from the previously used oil |
| 1 Fishery Technician | 1 | $3 2 | fiscal year to the federal fiscal year This new project also |
| 1 Fishery Technician | 0 5 | $1 4 | includes proposed funding for January and February, 1993 |

** If not funded in FY 94, no closeout costs are anticipated

7 Jul 92

**1993**



Project Number 93-024
Project Title Restoration of Coghill Lake Sockeye Salmon Stock
Sub-Project
Agency USFS

FORM 3A SUB-PROJECT DETAIL

| | |
|---|---|
| **Travel** | Funds are requested to transport staff and vehicles by train from Whittier to Portage |
| **Contractual** | Funds are requested to store fertilizer in Wasilla until it can be applied in the summer in 1993 Additional funds are needed for boat and air charter to transport staff from Whittier to Coghill Lake |
| **Commodities** | Funds are requested for camp supplies, fuel, oil, etc needed by staff when they travel to Coghill Lake |
| **Equipment** | No equipment is needed for this project |

# EXXON VALDEZ OIL SPILL PROJECT TRUSTEES

## I. TRANSMITTAL

## II. BASIC INFORMATION

Project Number 93025

Project Source

Project Title Montague Island Chum Salmon Restoration

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Project Category Restoration manipulation and/or enhancement

Project Type Fish/shellfish

Lead Agency USFS, Cordova Ranger District

Cooperating Agencies ADF&G

Project Term 5 yrs Start Date 1/10/92 (day/month/year) Finish Date 30/9/97 (day/month/year)

## III. INTRODUCTION

Prior to the 1964 earthquake, Montague Island streams accounted for nearly 8% of the total chum salmon production in Prince William Sound Habitat alterations caused by the uplift, combined with a number of environmental and man induced factors, led to the virtual extirpation of chums on the Island While some of the Island's historic chum producing streams are thought to have stabilized over time to once again support chum salmon populations, others have been slow to recover Many of the historic chum salmon producing streams were also moderately to lightly oiled by the T V Exxon Valdez oil spill, which caused further degradation of chum salmon habitat, particularly in the inter-tidal spawning areas There is also a lack of sufficient brood source to re-establish numbers of chums within Montague streams through natural straying and reproduction

## IV. WHAT

The goals of the project are

1 To re-establish wild stock populations of chum salmon on Montague Island and maintain the genetic diversity of wild chum salmon stocks in Prince William Sound

2 To provide mitigation to identified injured species through habitat restoration Once the project is established it could contribute an estimated 300,000 pounds of salmon annually to the common property fishery Approximately 10 miles of stream habitat will be rehabilitated to provide excellent habitat not only for fish species, but many wildlife species as well In addition, at least one artificial spawning channel willbe created

## V. WHY

Chum salmon were determined to be an injured species as a result of the Exxon Valdez oil spill Montague Island remains as one of the best Prince WilliamSound locations for improving wild chum salmon production The enhanced habitat will provide off-site mitigation for more severely damaged areas of the Sound

This project offers a means of minimizing impacts on fisheries within Prince WilliamSound by increasing chum salmon production This meets the goals of restoration Option Number 2 (Intensify Management of Fish and Shellfish) and 18 (Replace Fisheries Harvest Opportunities by Establishing Alternative Salmon Runs It also provides a means for implementing Restoration Option Number 11 (Improve or Supplement Stream and Lake Habitats for Spawning and Rearing of Wild Salmonids) The Forest Service has expertise in a variety of established techniques for salmonid habitat improvement

## VI. HOW

A four-year cooperative chum fry stocking effort in the Chalmers river was completed in 1990 This stocking proved successful when more than 1,000 chums were observed returning to Chalmers river Pending favorable spawning success of these fish, stocking efforts will be expanded to include all historic chum salmon producing streams on Montague Island Cooperative work with the Alaska Department of Fish and Game and Prince WilliamSound Aquaculture Corporation willcontinue to identify a source for brood stock and eggs willbe collected for culture by 1994

During 1991, spawning habitat surveys were conducted at fourteen of the seventeen top historic chum salmon producing streams, using the Chugach National Forest standard methods for quantifying fish habitat within streams During FY 92, the habitat

assessments will be completed in the remaining three of the seventeen historic chum streams, using the same standard methods Based on the information collected, recommendations willbe made on possible habitat restoration projects for several of the chum salmon streams These projects willbe further evaluated in FY 92 for hydrologic feasibility, using the slope area method (USGS standards for data collection and analysis) and aerial photo interpretation Projects will include instream structures in the form of large boulders, and log placements, spawning channel development, and riparian habitat management

During FY 92, riparian forest habitat willbe evaluated at three stream sites in the Port Chalmers area of Montague Island, using the R10 standard methods for assessment of plant associations within forested areas Based on the data collected, a riparian forest prescription willbe developed for each of the three streams in the Port Chalmers area Riparian forest management willinclude tree planting and tree thinning of selected zones Beginning in FY 93, forest riparian areas in the Montague Strait area willbe developed for each of these streams, and silvicultural techniques willbe applied during FY 94-Fy 97 Through effective silvicultural management these areas can be rehabilitated to provide excellent habitat not only for fish species, but many wildlife species as well

## VII. ENVIRONMENTAL COMPLIANCE

Given the scope of the proposed activities for FY 93, a categorical exclusion would be appropriate However, larger scale projects such as spawning channel development or instream work using heavy equipment may be developed based on information collected during FY 92 and FY 93 field seasons These type projects will require environmental assessments and therefore will be evaluated on a project by project basis Any environmental compliance documents willbe budgeted in the program for FY 94 and FY 95

## VIII WHEN

During FY 93, boulder and log placement willbe completed in three streams in the Port Chalmers area In addition, riparian habitat rehabilitation of 25 acres willbe completed at the same streams

Also during FY 93 riparian forest assessment will begin at five stream sites in the Montague Strait area Riparian forest management willbegin at those sites in FY 94 and be completed by FY 97

As fisheries and hydrologic assessments are completed in FY 92, projects will be developed for implementation in FY 95-97 Prior to implementation, design and NEPA documentation willbe necessary in FY 93-94

Project Description

| Budget Category | Approved 1-Oct-92 28 Feb-93 | Proposed* 1-Mar 93 30 Sep 93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $14 1 | $32 7 | $46 8 | $40 0 | $40 0 | $40 0 | $40 0 | |
| Travel | $3 0 | $15 2 | $18 2 | $18 5 | $18 5 | $18 5 | $18 5 | |
| Contractual | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Commodities | $0 0 | $2 0 | $2 0 | $3 0 | $3 0 | $3 0 | $3 0 | |
| Equipment | $0 0 | $7 5 | $7 5 | $8 0 | $8 0 | $8 0 | $8 0 | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | |
| Sub-total | $17 1 | $57 4 | $74 5 | $69 5 | $69 5 | $69 5 | $69 5 | $0 0 |
| General Administration | $2 1 | $4 9 | $7 0 | $2 4 | $2 4 | $2 4 | $2 4 | |
| Project Total | $19 2 | $62 3 | $81 5 | $71 9 | $71 9 | $71 9 | $71 9 | $0 0 |
| Full time Equivalents (FTE) | 1 7 | 1 7 | 1 7 | 1 7 | 1 7 | 1 7 | 1 7 | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| FISHERIES BIOLOGIST, GS-11 | 1 | $3 8 | |
| FISHERIES BIOLOGIST, GS-09 | 2 5 | $8 2 | |
| FISHERIES BIOLOGIST, GS-07 | 1 | $3 2 | |
| FISHERIES TECHNICIAN, GS-05 | 4 2 | $8 0 | |
| FISHERIES TECHNICIAN, GS-05 | 4 2 | $8 0 | |
| FISHERIES TECHNICIAN, GS-04 | 4 2 | $7 2 | |
| FISHERIES TECHNICIAN, GS 04 | 4 2 | $7 2 | |
| PROJECT MANAGER | 0 25 | $1 0 | |

17 Jul-92

**1993**



Project Number 93-025
Project Title CHUM SALMON RESTORATION -FED
Agency USDA FOREST SERVICE

FORM 2A
PROJECT
DETAIL

93_2BCSR.

| | | |
|---|---|---|
| **Travel** | per diem for 4 people for 70 days @ $15/day | $4 2 |
| | aircraft charters and WCF boat rentals | $14 0 |
| sub-tot | | $18 2 |
| **Contractual** | | $0 0 |
| sub-tot | | $0 0 |
| **Commodities** | field supplies, lab supplies, and office supplies | $2 0 |
| sub-tot | | $2 0 |
| **Equipment** | chain saws, cables, safety equipment, rock drill, generator | $7 5 |
| sub-tot | | $7 5 |
| sub GA | | $7 0 |
| sub 3A | | $46 8 |
| TOTAL | | $81 5 |

17 Jul 92

Project Number 93-025
Project Title Chum Salmon Restoration - Federal
Agency USDA Forest Service

**1993**



FORM 2B SUB-PROJECT DETAIL

# EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number** 93-026

**Project Source**

**Project Title** Fort Richardson Hatchery Water Pipeline

**Project Category** Restoration Enhancement

**Project Type** Fish

**Lead Agency** Alaska Department of Fish and Game

**Cooperating Agencies**

**Project Term** **Start Date** 1/1/93 **Finish Date** 6/30/94

**INTRODUCTION:** Over escapement of sockeye salmon occurred in the Kenai River as a direct result of the Exxon Valdez oil spill. This has led to a dramatic reduction in smolt survival and collapse of the Kenai River sockeye salmon fishery is expected beginning in 1993.

The Fort Richardson Hatchery currently uses only 50% of available fish rearing space because the existing water supply is limited. Construction of a water pipeline to connect the Fort Richardson Hatchery to the Municipal water system would allow immediate doubling of fish production. This increased production would then be used to provide alternative sport fishing opportunities as early as 1994, thus reducing the impact caused by the loss of the Kenai River sockeye salmon sport fishery.

The increased production of rainbow trout and king, coho, and pink salmon resulting from this project would be released into lakes and streams throughout Upper Cook Inlet and on the Kenai Peninsula providing direct alternative sport fishing opportunities for fishermen most severly impacted. Completion of this project would also increase hatchery dependability and reduce cost per unit of production so all areas served by the Fort Richardson Hatchery would indirectly benefit.

**WHAT:** The goal of this project is to provide alternative sport fishing opportunities to reduce the social and economic impact of the loss of the Kenai River sockeye salmon sport fishery. It is estimated that at least 100,000 angler days will be lost each year because of the collapse of Kenai River sockeye salmon fishery. Increased production at the Fort Richardson Hatchery would ameliorate this loss.

Fish production objectives are as follows:

| Species | Number | Size | Potential Angler Days |
|---|---|---|---|
| Rainbow Trout | 250,000 | 100 g | 50,000 |
| King Salmon | 800,000 | 15 g | 25,000 |
| | 50,000 | 100 g | 20,000 |
| Silver Salmon | 600,000 | 20 g | 32,000 |
| Pink Salmon | 2,000,000 | 0.15 g | 15,000 |

**WHY:** The loss of sport fishing opportunities for sockeye salmon on the Kenai River will have significant social and economic impact on the Cook Inlet area. Over 335,000 angler days were spent in pursuit of salmon on the Kenai River in 1990. A major portion of this effort was directed toward sockeye salmon with an average annual harvest of 107,500 sockeye salmon valued at approximately $10,000,000.

The extremely low number of out-migrant smolts in 1991 and 1992 strongly suggests that sockeye salmon production in the Kenai River has collapsed. It is very likely that sockeye salmon fishing will be closed for a number of years starting in 1993. However, if immediate action is taken the Fort Richardson Hatchery water pipeline project would provide alternative sport fishing opportunities during the years the Kenai River loses are expected to e most severe and would significantly reduce these impacts.

**HOW:** Project objectives would be met by constructing a water delivery system connecting the Municipal Water Utility with the hatchery. The main elements of this system include a cold water line running directly from the Municipal Water Plant to the hatchery and a second line that will provide heated water (via heat exchangers in the Sullivan Power Plant which is adjacent to the Water Plant) to accelerate fish growth.

An engineering feasibility study was completed in 1991 by F. Robert Bell and Associates. This study determined that this project was both technically and economically. In a separate study the Anchorage Economic Development Corporation determined that this project would have a benefit:cost ration of 2.8:1.

Fish cultural methodology will follow well established, standard Department of Fish and Game and FRED Division procedures and policies.

**ENVIRONMENTAL COMPLIANCE:**

Construction permits will be required. They will be the responsibility of the contractor. Hatchery is on a military reservation. Access permits to the reservation may be required. Project may be required to meet requirements under Clean Water Act.

**WHEN:** If this project is approved by the Trustee Council in August the preliminary work would begin immediately. In cooperation with the Municipality we would solicit proposals for engineering and design for review so that an engineering firm could be hired as soon as funds were available. Major milestones are as follows:

| | |
|---|---|
| Project design and engineering | January -- June 1993. |
| Collect rainbow trout eggs | April 1993 |
| Award construction contract | June 1993 |
| Collect king salmon eggs | July 1993 |
| Collect coho eggs | September 1993 |
| Water system on-line to support additional fish | January 1984 |
| Release fish | June 1984 |

**ADDENDUM:**

1. The municipality of Anchorage (which strongly supports this project) has an easement for this pipeline route; the corridor already contains an existing powerline.

2. After the pipeline is completed, the program will be partially operated by federal funding as it currently is; consequently, the NEPA public review process has been and will be followed before fish are released. This review process has been incorporated into the development of the ADF&G "Statewide Stocking Plan for Recreational Fisheries" (copy available upon request from FRED Div., Alaska Dept. of Fish and Game, 333 Raspberry Rd., Anchorage, AK 99518-1599). This document has been scheduled for review and updating in 1993. In addition, before any new release location is approved, it is also subjected to another ADF&G review process that addresses fish genetics, fish disease and fisheries management concerns (Fish Transport Permit or FTP process). Thus all releases are subject to both the federal NEPA and state FTP processes currently and will be in the future.

EXXON VALDEZ TRUSTEE COUNCIL

Project Description Fort Richardson Hatchery Water Pipeline Construct a water delivery system connecting the hatchery with the Municipal water plant This will allow doubling of fish production and these fish would be stocked in the lakes and streams to offset the loss of the Kenai River sockeye salmon fishery

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $0 0 | $30 0 | $30 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Travel | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Contractual | $0 0 | $3,500 0 | $3,500 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Commodities | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Equipment | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $0 0 | $3,530 0 | $3,530 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $0 0 | $87 0 | $87 0 | | | | | |
| Project Total | $0 0 | $3,617 0 | $3,617 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Full-time Equivalents (FTE) | | | | | | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost |
|---|---|---|
| Program Manager | 4 | $30 0 |

*Please note that this is a Capital construction project only
Only contractual funds would be required

NOTE All fish production and releases associated with this project will be reviewed by the NEPA process and the ADF&G Fish Transport Permit (FTP) approval process

Comment

* FY 93 is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993

**If not funded in FY 94, no closeout cost are anticipated All expenditures and encumbrances will occur in FY 93

17 Jul 92

1993



Project Number 93-026
Project Title Fort Richardson Pipeline
Agency ADF&G

FORM 2A
PROJECT
DETAIL

| | |
|---|---|
| **Travel** | None |
| **Contractual** | $3 5 Million Provide contract for engineering design and construction of a water delivery system and related work to connect the Municipal water system to the Fort Richardson Hatchery |
| **Commodities** | None |
| **Equipment** | None |

17 Jul 92

**1993**



Project Number 93-026
Project Title Fort Richardson Pipeline
Agency ADF&G

FORM 2B
PROJECT
DETAIL

# EXXON VALDEZ OIL SPILL PROJECT TRUSTEES

## I. TRANSMITTAL

## II. BASIC INFORMATION

Project Number 93028

Project Source

Project Title Restoration and Mitigation of Essential Wetland Habitats for Injured Prince William Sound Fish and Wildlife species

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Project Category Restoration manipulation and/or enhancement

Project Type Birds/mammals/fish

Lead Agency U S Forest Service

Cooperating Agencies Cooper River Delta Institute, Pacific Northwest Research Station, U S Forest Service

Project Term 5 yrs Start Date 1/10/93 (day/month/year) Finish Date 30/9/97 (day/month/year)

## III INTRODUCTION

Past events associated with 1964 earthquake drained the 250 ha lake within the San Juan Bay Drainage Since the uplift, periodic flooding occurs during periods of high, nearly continues rainfall or in combination with snow melt With this altered water regime the uplifted lake is undergoing a rapid succession from a sedge/grass community to a spruce/hemlock community At the same time, downcutting of the San Juan Creek has changed the character of the stream along a major portion of its course through the former lake bed Pool habitats important for anadromous fish rearing have been reduced and adjacent sedge meadows are undergoing plant succession to shrub and forest communities Opportunities exist for long term improvement of PWS waterfowl, furbearer and anadromous fish habitat within the stream and in the adjacent wet meadow zones

## IV. WHAT

Goal The purpose of this project is to restore the wetland habitats used by waterfowl, anadromous fish and furbearing species impacted by the oil spill in Prince William Sound

Objectives

1 Maintain a wetland component by flooding the uplifted lake bed and reversing succession from a forested habitat type to a early succession grass/sedge community

2 Create pools and ponds in riparian and flood plain areas to restore associated aquatic vegetation

## V. WHY

This project has the potential to improve habitat for waterfowl and anadromous fish These species were proven to be damaged by the Exxon Valdez oil spill This project falls within the category of habitat protection and acquisition and manipulation of resources since the objective is to rehabilitate habitats for injured species This project will implement restoration option number 11 (improve or supplement stream and lake habitats) and number 25 (protect or acquire upland forest and watersheds, established or extend buffer zones for nest birds)

## VI. HOW

This project willbe accomplished through the following sequence of events

1 Feasibility

This consists of conducting a) hydrologic analysis to determine subsurface flow regimes, b) soils analysis to determine soils types, and, c) channel morphology analysis Monthly surveys will determine wildlife use of the area from spring through fall

2 Inventory Existing Habitat
This willbe accomplished by low level aerial photography of San Juan Bay area This willbe coordinated with proposal number 29854 Vegetation surveys willbe conducted to determine existing plant community type

3 Project Design
After feasibility and inventory studies are completed, vegetation objectives willbe established specific to the targeted species and engineering design will be completed to meet those objectives

4 Environmental Analysis

An Environmental Analysis will be conducted prior to a decision for any action The scope of the Environmental Analysis will depend on the result of public scoping and issues developed

5 Implementation

If the decision is made to implement the recommended engineering design after the Environmental Analysis this project could be accomplished over the following three years

6 Monitoring

Monitoring willcontinue for five years after completion of the project to determine if the vegetation objectives were met

## VII. ENVIRONMENTALCOMPLIANCE

Given the scope of this project an Environmental Analysis will be required which may result in a finding of no significant impact

## VII WHEN

The following is the proposed schedule

| | |
|---|---|
| Hydrologic Analysis | January 1 - February 15, 1993 |
| Develop Low Aerial Photography | June 1 - 15, 1993 |
| Soils Analysis | June 15 - 30, 1993 |
| Wildlife Surveys | April 1 - October 1, 1993 |
| Engineering Data Collection | June 1 - 30, 1993 |
| Project Design | September 1 - 30, 1993 |
| Environment Analysis | January 1 - April 1, 1994 |
| Implementation | 1994-1998 |
| Monitoring | 1994-1998 |

Project Description RESTORATION AND MITIGATION OF ESSENTIAL WETLAND HABITATS FOR INJURED PRINCE WILLIAM SOUND FISH AND WILDLIFE SPECIES

| Budget Category | Approved 1 Oct-92 28-Feb 93 | Proposed* 1-Mar 93 30-Sep-93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $13 6 | $30 5 | $44 1 | $35 0 | | | | |
| Travel | $5 4 | $12 6 | $18 0 | $10 0 | | | | |
| Contractual | $0 0 | $5 0 | $5 0 | $75 0 | | | | |
| Commodities | $0 0 | $0 0 | $0 0 | $0 0 | | | | |
| Equipment | $2 0 | $6 0 | $8 0 | $5 0 | | | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | | | | |
| Sub-total | $21 0 | $54 1 | $75 1 | $125 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $2 0 | $5 0 | $7 0 | $10 5 | | | | |
| Project Total | $23 0 | $59 1 | $82 1 | $135 5 | $100 0 | $50 0 | $50 0 | $0 0 |
| | | | | | | | 1 | |
| Full time Equivalents (FTE) | 1 1 | 1 1 | 1 1 | 1 0 | 1 0 | 1 0 | | |

Amounts are shown in thousands of dollars

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| HYDROLOGIST,GS-11 | 1 | $3 8 | |
| SOILS SCIENTIST,GS 11 | 1 | $3 8 | |
| WILDLIFE BIOLOGIST | 2 | $7 6 | |
| ENGINEER | 1 | $3 8 | |
| ENGINEER TECHNICIAN | 1 | $3 8 | |
| WILDLIFE BIOLOGIST | 4 | $13 2 | |
| WILDLIFE TECHNICIAN | 4 | $7 6 | |
| Project Manager | 0 25 | $1 0 | |

**1993**



Project Number 93-028
Project Title WETLANDS RESTORATION - FED
Agency USDA FOREST SERVICE

FORM 2A
PROJECT
DETAIL

| | | |
|---|---|---|
| **Travel** | Per diem, small aircraft charters, and WCF boat rental | $18 0 |
| sub-tot | | $18 0 |
| **Contractual** | low aerial photography | $5 0 |
| sub-tot | | $5 0 |
| **Commodities** | | $0 0 |
| sub-tot | | $0 0 |
| **Equipment** | field and office supplies | $8 0 |
| | | $0 0 |
| | | $0 0 |
| | | $0 0 |
| sub-tot | | $8 0 |
| sub GA | | $7 0 |
| sub 3A | | $44 1 |
| TOTAL | | $82 1 |

17 Jul 92

Project Number 93-028
Project Title WETLANDS RESTORATION- FED
Agency USDA FOREST SERVICE

FORM 2B
SUB-
PROJECT
DETAIL

**1993**

# EXXON VALDEZ OIL SPILL PROJECT TRUSTEES

## I. TRANSMITTAL

## II. BASIC INFORMATION

Project Number 93029

Project Source

Project Title Prince William Sound Second Growth Management

Project Category Restoration manipulation and/or enhancement

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Project Type Birds/mammals

Lead Agency U S Forest Service

Cooperating Agencies

| Project Term 5 yrs | Start Date 1/10/93 (day/month/year) | Finish Date 30/9/97 (day/month/year) |
|---|---|---|

## III. INTRODUCTION

The Prince William Sound area has several watersheds on National Forest Lands where timber harvest occurred in the early 1970's These cuts were made without an understanding of optimum stand structures for wildlife populations As a result of these harvest practices, succession to old growth will be delayed as much as 75 years Old growth dependent species such as river otter, marbled murrelet, harlequin duck, and bald eagle are therefore being negatively impacted

Managing second growth in Alaska's costal rain forest with emphasis for fish and wildlife has been a documented practice since the early 1980's in Southeast Alaska Proven techniques to advance succession and maintain the understory component have not been applied to Prince William Sound second growth in Prince William Sound on National Forest lands

## IV WHAT

Goal The purpose of this project is to provide mitigation through habitat enhancement to identified injured wildlife species in Prince William Sound

Objectives

1 Maintain understory vegetation components throughout the successional stages of second growth

2 Increase successional trends in key wildlife habitat areas to develop old growth structure Approximately 2,500 acres of second growth habitat will be evaluated for enhancement opportunities

## V. WHY

This project has the potential to improve habitat for harlequin duck, marbled murrelet river otter and bald eagle These species were proven to be damaged by the Exxon Valdez oil spill This project falls within the category of habitat protection and acquisition and manipulation of resources since the objective is to rehabilitate habitats for injured species This project willimplement restoration option number 11 (improve or supplement stream and lake habitats) and number 25 (protect or acquire upland forests and watersheds, established or extend buffer zones for nesting birds)

## VI HOW

This project willbe accomplished through the following sequence of events

1 Inventory existing data base

This consists of compiling existing data on Prince William Sound second growth, establishing date of harvest, and entering GIS data base

2 Inventory existing habitat

This willbe accomplished by low level aerial photography of all second growth sites and field sampling to determine existing vegetation community type and site potential

3 Define vegetation objectives

After the second growth areas have been described, vegetation objectives willbe established specific to the targeted species

4 Site Prescription

Prescriptions will be developed identifying recommended treatment to meet the vegetation objectives Treatment options could consist of pre-commercial thinning at varied spacing to maintain understory vegetation throughout the rotation

5 Environmental Analysis

An environmental analysis willbe conducted prior to a decision as required by the National Environmental Policy Act

6 Implementation

If the decision is made to implement the recommended treatment after the Environmental Analysis this project could be accomplished over the following three years

## VII. ENVIRONMENTALCOMPLIANCE

Given the scope of this project an environmental analysis will be required which may result in a finding of no significant impact

## VIII. WHEN

The following is the proposed scheduled

| | |
|---|---|
| Inventory Existing Data Base | January 1 - February 15, 1993 |
| Develop Low Aerial Photography | June 1 - June 15, 1993 |
| Inventory Habitat | June 1 - September 1, 1993 |
| Define Vegetation Objectives | September 1, - 15, 1993 |
| Write Site Prescriptions | September 15 - September 30, 1993 |
| Environmental Analysis | November 1, - March 1, 1994 |
| Implementation of Prescriptions | Contract 1994-1997 |

Project Description SECOND GROWTH MANAGEMENT

| Budget Category | Approved 1 Oct-92 28 Feb 93 | Proposed* 1-Mar 93 30-Sep 93 | Total FY 93 | FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $10 0 | $24 2 | $34 2 | $30 0 | | | | |
| Travel | $0 0 | $6 0 | $6 0 | $6 0 | | | | |
| Contractual | $0 0 | $10 0 | $10 0 | $50 0 | | | | |
| Commodities | $0 0 | $0 0 | $0 0 | $0 0 | | | | |
| Equipment | $2 0 | $4 0 | $6 0 | $0 0 | | | | |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | | | | |
| Sub total | $12 0 | $44 2 | $56 2 | $86 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| General Administration | $1 7 | $4 1 | $5 8 | $4 5 | | | | |
| Project Total | $13 7 | $48 3 | $62 0 | $90 5 | $60 0 | $60 0 | $60 0 | $0 0 |
| Full time Equivalents (FTE) | 0 7 | 0 7 | 0 7 | 0 7 | 0 7 | 0 7 | 0 7 | |
| | | | | | Amounts are shown in thousands of dollars | | | |

**Budget Year Proposed Personnel**

| Position | Months Budgeted | Cost | Comment |
|---|---|---|---|
| SILVICULTURALIST, GS-11 | 4 | $15 2 | |
| WILDLIFE BIOLOGIST, GS-11 | 2 | $7 6 | |
| WILDLIFE BIOLOGIST, GS-07 | 2 | $6 6 | |
| WILDLIFE TECHNICIAN, GS-05 | 2 | $3 8 | |
| PROJECT MANAGER | 0 25 | $1 0 | |

* FY 93 Is a transition year from the previously used oil fiscal year to the federal fiscal year This new project also includes proposed funding for January and February, 1993



Project Number 93-029
Project Title 2ND GROWTH - FEDERAL
Agency USDA FOREST SERVICE

FORM 2A
PROJECT
DETAIL

| | | |
|---|---|---|
| **Travel** | Small aircraft charters, WCF boat rental, field per diem | $6 0 |
| sub-tot | | $6 0 |
| **Contractual** | Low aerial photography | $10 0 |
| sub tot | | $10 0 |
| **Commodities** | | |
| sub-tot | | $0 0 |
| **Equipment** | Field and Office supplies | $6 0 |
| sub-tot | | $6 0 |
| sub GA | | $5 8 |
| sub 2A | | $33 2 |
| TOTAL | | $61 0 |

17 Jul-92



Project Number 93-029
Project Title 2ND GROWTH - FEDERAL
Agency USDA FOREST SERVICE

FORM 2B -PROJECT DETAIL

# VALDEZ OIL SPILL PROJECT DESCRIPTION

**Project Number: 93-030**

**Project Source:**

**Project Title: Red Lake Restoration**

**Project Category:** Restoration, Manipulation and/or Enhancement

**Project Type: Fish**

**Lead Agency:** Alaska Department of Fish and Game

**Cooperating Agencies:**

**Project Term:** **Start Date:** 1/7/93 **Finish Date:** 9/30/97

**INTRODUCTION:** Red Lake, located on the southwest side of Kodiak Island, has historically been one of the most consistent producers of sockeye salmon for Kodiak's commercial purse seine fishermen The Department of Fish and Game's annual escapement goal for the system ranges from 200 to 300 thousand Since 1980, the catch has ranged from 25,000 to 1 5 million with an average of 450,000 This fishery has had an average annual value to fishermen of about $2 2 million

Careful management of the number of spawning fish is required to maintain this fishery at a high level Young sockeye salmon spend at least their first year of life (up to 3 years) living and growing in lakes where they rely on microscopic-sized animals (plankton) for food These animals, in turn, graze on tiny plants If too many adult salmon spawn in the lake system, an overabundance of the young sockeyes will deplete their limited food source before they migrate to sea When this happens, large numbers of young salmon die, survivors grow more slowly and smaller numbers migrate to the ocean to mature So, large numbers of spawners in one year may result in an unusually small run in the next cycle

In 1989, as a result of the Exxon-Valdez oil spill, commercial salmon fishing was closed over most of Kodiak Island waters The closure resulted in an escapement of 768,000 sockeye salmon into Red Lake, a 2 5 fold increase over the maximum desired Data gathered showed low survival for the 1989 escapement year Surveys showed low numbers of juveniles in the lake in the fall of 1990, and, in the spring of 1991, reduced number of migrant smolts were observed This means that very low numbers of sockeye will return as four-, five-, and six-year olds in 1993, 1994, and 1995 It is

anticipated that adult salmon return may be depressed to the extent that the escapement may fall below 150,000 If this happens during one or more of these years, supplemental production would be implemented immediately to restore the population

If immediate actions are taken, we will have the capability to restore Red Lake sockeye salmon production There is serious concern that, as a result of the oil spill, sockeye salmon returns will be so low in 1993 and 1994 that minimum spawning population goals will not be achieved If this were to happen, the productivity of this lake would be underutilized, and the fishery and economy would be seriously impacted in future years Immediate action is necessary to guard against this

Restoration will involve taking a total of six million early run sockeye salmon eggs at Red Lake by August 30 each year The eggs will be transported and incubated in a module at the Pillar Creek Hatchery in Kodiak Fry will be reared until emergence and then released into Red Lake in May of each year

The commercial purse seine fleet will benefit from this project as well as all associated fishing communities on Kodiak Island The Red Lake sockeye fishery has historically provided a stable, significant source of income for Kodiak fisherman, consequently, restoration of this system is extremely important

**WHAT:** The goal of this project is to supplement natural sockeye fry production in Red Lake with fry plants if escapement levels fall below minimum levels

Project objectives are

1) Increasing the incubation and rearing capacity of Pillar Creek Hatchery to support additional Red Lake eggs and fry

2) Collecting six million early run Red Lake sockeye eggs, beginning in 1993 and continuing through 1995, contingent upon Red Lake escapement falling below the minimum escapement goal of 150,000 by August 1

3) Incubation of six million Red Lake sockeye eggs at Pillar Creek Hatchery with 90% survival from green to eyed eggs

4) Rearing of approximately 5 4 million Red Lake sockeye fry at Pillar Creek Hatchery to the size of 25 grams with 90% survival

5) Evaluating freshwater survival and the success of hatchery fry plants, by thermally marking otoliths of fry prior to stocking into Red Lake

6) Stocking of approximately 4 9 million fed fry ( 25 gram) into Red Lake with timing parallel to the period of wild stock recruitment

7) Producing approximately 146,000 adult red salmon from annual fry plants (3% fry to adult survival)

**WHY:** The project restoration activity will result in restoration by allowing wild and cultured fry to enter the lake at the same period A forecasted survival rate of 3% from fry to adult could result in 146,000 adults returning each year to the Red Lake system

This project should be funded because immediate actions are needed to restore Red Lake sockeye salmon production if expected damage from the oil spill is realized This damage is expected to result in weak return in 1993 and 1994, when minimum escapement goals may not be acheived If this happens, the productivity of the lake would be underutilized and the fishery and economy would be seriously impacted in future years

**HOW:** Pillar Creek hatchery will be modified by the addition of an incubation module and 24 Kitoi box incubators to allow receipt of Red Lake eggs Additional raceways will be installed to short term rear emergent fry Net pens, frames, seines and other egg take gear will be purchased and staged in Kodiak in July each year, after the initial purchase in 1992 If escapement into Red Lake is below 150,000 by August 1 (beginning in 1993) an egg take will proceed Eggs will be collected, with a goal of 6,000,000, in August and transported to Pillar Creek Hatchery for incubation During incubation, between the eyed and hatched stages, eggs will b marked by thermally induce otolith banding Fry will be reared in aluminum raceways until reaching a weight of 25 grams and then will be transported by float plane for release into Red Lake Smolt samples will be collected via NRDA #27 smolt enumeration project and checked for marks to determine hatchery fry contribution and project success

This project will be operated in close association with NRDA Study #27 which monitors the effects of the 1989 overescapement on the productivity of Red Lake This monitoring will assist with forecasting returns and also in association with the ADF&G weir, will help coordinate this project's restoration activities Also, Pillar Creek Hatchery enhancement and rehabilitation activities in other areas of Kodiak Island will provide technical assistance to this project

**ENVIRONMENTAL COMPLIANCE:** Red Lake lies within the boundaries of the Kodiak National Wildlife Refuge Other projects of this type on refuge lands have required an environmental analysis (EA) and a "finding of no significant impact" The EA will be completed prior to implementation of this project

| **WHEN:** | Event | Date Started | Completion |
|---|---|---|---|
| | Purchasing incubators, raceways, pipeline, and plumbing | 7/92 | 1/93 |
| | Purchasing egg take supplies | 1/93 | 2/93 |
| | Annual project status report | 11/92 | 12/92 |
| | Preparation of PCH for receiving of eggs, incubator, raceways, and pipeline installation, egg take camp set up, supply ordering | 3/93 | 6/93 |
| | Egg take site preparation | 7/93 | 8/93 |
| | Red Lake sockeye egg take and site breakdown | 8/93 | 9/93 |
| | Annual project status report | 11/93 | 12/93 |
| | Red Lake sockeye incubation and rearing | 8/93 | 5/94 |
| | Red Lake stocking | 5/94 | 5/94 |

Repeat above sequence until end of project

Project Description This project will restore the Red Lake sockeye stock which is expected to be depressed and/or collapse in 1993 and 1994 due to poor production as result of overescapement in 1989 Fry plants will supplement natural production to restore this system

| Budget Category | Approved 1-Oct-92 28-Feb-93 | Proposed* 1-Jan-93 30-Sep-93 | Total FY 93 | ** FY 94 | FY 95 | FY 96 | FY 97 | Sum FY 98 & Beyond |
|---|---|---|---|---|---|---|---|---|
| Personnel | $4 6 | $32 3 | $36 9 | $36 8 | $37 6 | $40 0 | $41 5 | $0 0 |
| Travel | $0 4 | $0 9 | $1 3 | $1 2 | $1 2 | $1 1 | $1 2 | $0 0 |
| Contractual | $2 4 | $7 2 | $9 6 | $10 8 | $10 7 | $10 4 | $10 6 | $0 0 |
| Commodities | $3 3 | $14 8 | $18 1 | $21 9 | $22 2 | $22 0 | $21 9 | $0 0 |
| Equipment | $16 3 | $16 6 | $32 9 | $10 9 | $11 4 | $11 4 | $12 4 | $0 0 |
| Capital Outlay | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 | $0 0 |
| Sub-total | $27 0 | $71 8 | $98 8 | $81 6 | $83 1 | $84 9 | $87 6 | $0 0 |
| General Administration | $0 9 | $5 4 | $6 3 | $6 3 | $6 4 | $6 7 | $7 0 | $0 0 |
| Project Total | $27 9 | $77 2 | $105 1 | $87 9 | $89 5 | $91 6 | $94 6 | $0 0 |
| Full-time Equivalents (FTE) | 0 0 | 0 7 | | 0 7 | 0 7 | 0 7 | 0 8 | 0 0 |

| Budget Year Proposed Personnel | | | |
|---|---|---|---|
| Position | Months Budgeted | Cost | |
| 5 FWT II | 2 75 | $8 8 | Comment |
| 2 FWT III | 1 | $3 8 | * FY 93 is a transition year from the previously used oil fiscal |
| 1 FWT I | 0 5 | $1 5 | year to the federal fiscal year This new project also includes |
| 1 FB I | 0 5 | $2 0 | proposed funding for January and February, 1993 |
| 1 F Culturist I | 1 | $4 2 | |
| 1 Program Manager | 0 7 | $5 0 | ** If not funded in FY 94, no closeout costs are anticipated |
| 1 A/P IV | 0 5 | $2 7 | |
| 1 A/P II | 0 5 | $2 1 | |
| 1 PS II | 0 5 | $2 2 | |

17 Jul 92

1993



Project Number 93-030
Project Title Red Lake Restoration
Agency ADF&G

FORM 2A
PROJECT
DETAIL

| | |
|---|---|
| **Travel** | Three trips to Anchorage from Kodiak for meetings |
| **Contractual** | Air charters, freight, egg picker, backhoe rental |
| **Commodities** | Egg take equipment, formalin, marking supplies, propane, gas, camp supplies, lumber and materials for modules, groceries, rain gear, hip boots, fish food, plumbing supplies |
| **Equipment** | Inflatable boat, outboard motor, beach seine, net pens, frames, weatherport tents, autofeeders, raceways and incubators |