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Effects of Oiled Incubation Substrate on Straying and Survival of Wild Pink Salmon

Project Number:	98076
Restoration Category:	Research
Proposer:	A. Wertheimer/NOAA
Lead Trustee Agency:	NOAA
Cooperating Agencies:	None
Alaska SeaLife Center:	No
New or Continued:	Cont'd
Duration:	4th yr. 4 yr. project
Cost FY 98:	
	\$272.2
Cost FY 99:	\$0.0
Cost FY 2000:	\$0.0
Cost FY 01:	\$0.0
Cost FY 02:	\$0. 0
Geographic Area:	Southeast Alaska
Injured Resource/Service:	Pink salmon

ABSTRACT

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This project examines the effects of oil exposure during embryonic development on the straying, marine survival, and gamete viability of pink salmon. The objectives are to conduct a related series of controlled experiments on straying of pink salmon to determine the role of oil and other factors so that field studies of straying in Prince William Sound after the oil spill can be interpreted; to determine if the return rate of pink salmon to adult is reduced when they have been exposed to oiled gravel during embryonic development; and to continue investigations into whether such exposure causes heritable damage to reproductive fitness of pink salmon.

INTRODUCTION

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This project examines the effects of oil exposure during embryonic development of pink salmon on the straying, marine survival, and gamete viability of returning adults. A series of controlled experiments will determine the impact of oil exposure on straying, as well as the effects of other factors (marking, stock, and transplant), so that measurements of straying in PWS after the spill can be interpreted, and the significance of straying on management and restoration strategies can be evaluated. We will also determine if oil exposure during embryonic development reduces the return rate of pink salmon to adult. It continues the investigations into whether such exposure reduces the gamete viability of surviving adults, and if such damage is heritable. This Restoration Project has combined Projects --076 and --191B. These projects were closely related studies on direct and indirect toxic effects of crude oil on pink salmon exposed as embryos in oiled gravel. They were combined to achieve logistic efficiency and cost savings.

This project required marking several hundred thousand fry from wild and experimental treatment groups in 1996 (Table 1). These fry were the progeny of pink salmon collected and spawned for the experiments in 1995. For the exposure experiments, fertilized eggs were incubated in a controlled simulation of oiled intertidal habitat which occurred in Prince William Sound (PWS) after the *Exxon Valdez* oil spill. Fry from the oil-exposed and control groups were marked to identify treatments, and then released to migrate to the Gulf of Alaska. Corresponding groups of wild fry were also captured and marked.

Returning adults from these groups will be recovered in natal streams, other streams within 50 km of the natal streams, and in an adjacent hatchery fishery and escapement in 1997. Recoveries of tagged adults will be used to determine if oil exposure causes differences in straying and marine survival. Escapement and sampling rates in natal and non-natal streams will be estimated so that actual straying rates within the sampling region can be estimated, and the effects of oil, marking, population, and geographic factors on straying rate can be evaluated. Adults from the oil-exposure experiments that return to the release site will be identified as to treatment and then spawned. The fertilized eggs will be incubated in a clean environment. Survival of their progeny to the fry stage will be measured to determine if exposure to oil during incubation impaired reproductive viability.

Progeny of adults returning from Project 96191B were also tagged and released to examine the crossgenerational inheritance of reduced reproductive viability due to oil. Two groups were marked: (1) progeny of returns from embryos exposed to oil in 1993/1994; and (2) progeny of the respective controls. These fry, the F-1 offspring of the original parental exposure, had been incubated in freshwater with no additional hydrocarbon exposure. Marked adults from these groups will be recovered at Little Port Walter (LPW), identified at spawning, and mated to produce F-2 offspring. Survival of these F-2 embryos will be analyzed to determine whether reproductive impairment was inherited.

This is the final year of a large multi-year study requiring significant logistic support for operations at remote sites. The study is located in southeast Alaska because of the possible influence of prior or continuing oil contamination of pink salmon in PWS. The project was initiated in FY95 and will extend over four years. Annual reports will be prepared each year. Most field work will be completed in FY97. Activities in FY98 will focus on the completion of stream survey operations; evaluation of gamete viability of spawners from experimental groups; data analysis; and preparation on a final report

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summarizing the results of the study and the analysis of the restoration objectives. A synthesis of the results with previous field studies on pink salmon straying in PWS will also be prepared to evaluate the mpacts of oil on straying of pink salmon, and to assess the implications of direct and indirect damage from crude oil to management and restoration strategies for pink salmon in PWS.

NEED FOR THE PROJECT

A. Statement of Problem

Pink salmon were injured at several life-history stages during and shortly after the oil spill. Evidence of long-term damage from the toxic exposures of 1989 continues to build, and a thorough evaluation of the toxic contribution to pink salmon recovery problems became even more important when there was no explanation for the precipitous decline in pink salmon and herring in 1993. Three areas of continuing concern are the impacts of oil exposure on: (1) homing and straying behavior; (2) survival of emergent fry in the marine environment; and (3) reproductive viability of exposed fish and their offspring.

Straying was a major concern during the spill; the Trustees supported a multi-million dollar effort to assess straying, and substantial straying of wild and hatchery stocks was observed. Unfortunately, the interpretation of that study is severely limited for several reasons. Consequently, the amount of straying caused by oil is not known, natural straying rates are not known, and straying information cannot be used to develop or adjust restoration or management strategies.

B. Rationale

Pink salmon will be considered recovered when population indicators, such as growth and survival, are within normal bounds and there is no statistical differences in egg mortality between oiled and unoiled streams. Understanding the toxic effects of the 1989 oiling is a major component of the Trustee Council's program to restore pink salmon. Results from Natural Resource Damage Assessment and Restoration Studies following the spill indicate that the toxic exposures of 1989 have caused persistent, long-term damage to pink salmon. Field studies in PWS after the *Exxon Valdez* oil spill have demonstrated differences in embryo survival between oiled and non-oiled streams. In addition, laboratory studies have shown that differences in survival between oiled and non-oiled streams may be heritable (Restoration Study 94191A). Long-term (7-8 months) intra-gravel exposure of developing pink salmon eggs and alevins caused retarded development, altered emergence timing, decreased survival to eyeing and emergence, and an increased occurrence of gross lesions at emergence; it also had the surprising effect of delayed impacts on marine growth (Restoration Study 95191B). These developmental abnormalities from exposure to oil could persist and affect the behavior and fitness of the fish during subsequent life-history stages, including: (1) homing and straying; (2) survival of emergent fry in the marine environment; and (3) reproductive viability of exposed fish and their offspring.

Straying of pink salmon was a major concern following the spill. The Trustees supported a large hatchery and wild stock marking effort, and substantial straying of wild and hatchery stocks was observed. The ability of salmon to home (to return to their natal stream to spawn) is probably the most well-known and remarkable characteristic of these fish. Not all salmon return to their natal stream, however; some stray to non-natal streams to spawn. Some degree of straying is important to salmon

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populations; it is a mechanism for colonization of new habitat, as well as for the recolonization of habitat that has been damaged and subsequently restored. However, disruption in the normal amount of straying could have adverse impacts on the genetic structure of locally-adapted salmon populations. If high straying rates for pink salmon occur naturally in PWS, then the genetic structure of the populations in PWS should be relatively homogeneous, and large-scale mixing of wild stocks and the hatchery stocks derived from them should be of minor concern. Restoration of damaged pink salmon runs would thus be expected to occur naturally through recolonization from healthy stream systems. However, if the presence of oil increased straying from normally low levels, then the genetic diversity among and within wild stocks could be jeopardized from induced straying, and the genetic damage hypothesized to occur as a result of incubation in oiled substrate could be passed on to pink salmon in streams originally not contaminated by oil from the *Exxon Valdez*.

Straying rates for wild pink salmon observed in PWS in 1991 averaged 26% and ranged from 8-54% for fish from both oiled and non-oiled streams, based on coded-wire tag (CWT) recoveries in natal and non-natal streams. These straying rates seem high in relation to the concept that salmon normally home. Unfortunately, interpretations of that research are confused because even the wild stocks from non-oiled streams (controls) had to pass through oiled areas, and, thus, were not true controls. Also, marking the fish with CWTs may have affected their straying behavior. Normal levels of straying are not known for pink salmon. Consequently, the amount of straying caused by oil is not known, and straying information cannot be used to adjust restoration or management strategies. This study will conduct controlled straying experiments to permit an evaluation of oil on straying, and to examine the effect of tagging, stock, and transplant on straying. To avoid the confounding effects of prior or continuing exposure to oil, the experiments need to be carried out in a geographic region remote from PWS. By identifying the effects of the various factors on straying, however, the results of these experiments can be directly applied to interpret the previous straying study in PWS.

Pink salmon incubated in oiled gravel experience long-term effects that may lead to reduced fitness but a rigorous demonstration remains to be made. Restoration Study 95191B demonstrated that pink salmon incubated in oiled gravel had reduced growth rates, and matured at a smaller size. In addition, there was strong evidence for reduced marine survival and gamete viability, but statistical analysis failed to reveal differences because of limitations imposed by the experimental designs. These are important findings that support the lower embryo survival in oiled streams observed by Bue et al. (1996) and represent the first observations of long-term effects of oil on an economically important species. The large numbers of fish proposed for release in this study will provide adequate numbers of surviving adults to overcome the limitations of the experimental designs in the Restoration Study 95191B. Thus, the observations of reduced growth, marine survival and gamete viability may be corroborated. In addition, we propose to demonstrate the heritability of these effects by coded-wire tagging and releasing the offspring of the fish exposed in Restoration Study 95191B. These fish have been incubated in uncontaminated environments since they were spawned in 1995, and their growth, marine survival and gamete viability will be evaluated when they return in 1997.

C. Location

The project will be implemented at LPW (Figure 1), a research facility of the NMFS Auke Bay Laboratory (ABL). This location is appropriate because of the logistic and infrastructural support the ABL and the LPW station provide for this complex array of experiments. It is also necessary to examine

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the response of pink salmon straying to oil exposure at a geographic locale remote from PWS, to eliminate the confounding effect of prior or continuing oil exposure. For the exposure experiments and the F-1 progeny, gametes were collected at Lovers Cove Creek and Sashin Creek, Baranof Island, southeast Alaska. The eggs were incubated, and resulting fry tagged at LPW, near the mouth of Sashin Creek, 10 km from Lovers Cove Creek. Returning adult pink salmon will be recovered from streams on the eastern coast of Baranof Island and the west coast of Kuiu Island, within 50 km of LPW, as well as at the weir on Sashin Creek.

Technical support provided at this location includes the use of the research station at LPW as a base for the fieldwork. This station will provide housing for project personnel, hatchery facilities for egg incubation, a weir across Sashin Creek for recovery of adult pink salmon, equipment for recovering and decoding of CWTs, and facilities for holding and spawning of adult pink salmon. The ABL provides tagging machines, vessel support, computer services, analysis of GC/MS samples, and communication and administrative support. Materials and personnel will be transported to and from LPW via the NOAA vessel R/V John N. Cobb, as well as contracted air taxi charters. The John N. Cobb will also be provided to support stream survey operations.

COMMUNITY INVOLVEMENT

Scientists involved in this study will regularly present progress reports and results in scientific and public forums, including the annual workshop. They will be available to talk with interested public and will provide information for Trustee Council newsletters and annual reports as appropriate.

This project will be located in southeast Alaska outside of the spill affected area because of the need to avoid the confounding effects of previous or continuing oil contamination in PWS. However, it will require substantial labor for fish marking and stream surveys, as well as contracts for vessel charters. Agency hiring restrictions may limit us to contract hires for the intensive labor needs. In the first three years of this project, we have contracted people from communities in the area of the study (Juneau, Sitka, Petersburg, and Port Alexander), and anticipate similar contractual arrangements in FY98 for labor. We have also given the Port Alexander School a standing invitation for bringing students to the facility to view the operations and learn about scientific inquiry in general and oil toxicity studies on salmon in particular. We will continue to provide information to interested public (primarily fishermen) who visit the station; we will be displaying at the facility the posters developed for the Restoration Workshop for 95191B, 95076, and 96076 as interpretative tools.

PROJECT DESIGN

After the unexpected decline of pink salmon in 1993, two major research thrusts emerged: (1) evaluation of the ecosystem and its ability to support recovery of populations (SEA plan) and, (2) evaluation of long-term damage from earlier oil exposure. Long-term damage was not originally suspected, even though there was ample evidence of short-term damage such as reduced embryo survival (Bue et al. 1996), reduced marine growth (Wertheimer and Celewycz 1996; Willette 1996), and population effects (Geiger et al. 1996). Bue et al. (1996) found that elevated egg mortalities continued in oiled streams beyond the initial years of heavy oiling in intertidal spawning zones. They hypothesized

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that these persistent effects resulted from heritable damage passed on to subsequent generations. One model of how oil contamination could cause this damage is based on the biology of pink salmon egg-alevin development: Pink salmon spawn in contaminated intertidal zones of streams; the embryos incubate in contaminated streams for 7-8 months; and oil, which is extremely lipophillic, is readily absorbed into the large yolk reserves of the embryos. This exposure then causes both lethal and non-lethal damage to developing embryos. The non-lethal damage can result in subtle developmental changes with potentially large implications in later life history stages, such as reduced marine survival and increased straying.

This model of exposure and damage is supported by controlled laboratory exposures to pink salmon eggs at LPW. This research, stimulated by the Alaska Department of Fish and Game (ADFG) field studies, has shown that long-term (7-8 months) intra-gravel exposure of developing pink salmon eggs and alevins caused the predicted short-term effects (retarded development, altered emergence timing, decreased survival to eyeing and emergence, an increased occurrence of gross lesions at emergence) and also had the surprising effect of delayed impacts on marine growth (Restoration Study 94191B). These developmental abnormalities from exposure to oil could persist and affect the behavior and fitness of the fish during subsequent life-history stages, including (1) homing and straying; (2) survival of emergent fry in the marine environment; and (3) reproductive viability of exposed fish and their offspring.

Straying

Substantial straying was observed in PWS after the oil spill in 1991 in a large tagging effort of both wild and hatchery pink salmon (Sharp et al. 1995). Interpretations of the study are confused because of concern that tagging caused some of the straying (Habicht et al. *In review*), and because even the wild stocks from non-oiled streams (controls) had to pass through oiled areas and were thus not true controls. Normal levels of straying are not known for pink salmon, therefore it is difficult to evaluate the consequences of the observed straying. This study will conduct controlled experiments to permit an evaluation of the effects of oil incubation, tagging, stock, and transplant on straying. To avoid the confounding effects of prior or continuing exposure to oil, the experiments need to be carried out in a geographic region remote from PWS. By identifying the effects of the various factors on straying, however, the results of these experiments can be directly applied to interpretation of the previous straying study in PWS.

Straying rates for wild pink salmon observed in PWS in 1991 averaged 26% for fish from both oiled and non-oiled streams, based on coded-wire tag (CWT) recoveries in natal and non-natal streams (Sharp et al. 1995). Straying was highly variable, ranging from 8% to 54% for the six wild populations marked; straying rates were higher on average for wild fish than for hatchery fish. These high straying rates were surprising, but interpretation and use of the data were severely limited for several reasons. First, natural straying rates for pink salmon are not known for PWS or other areas. Second, the "controls" were wild stocks from non-oiled streams, but these fish had to migrate along contaminated shores, and were not true controls. Thus no measure of normal rates exists. Furthermore, if oil contamination continues, or heritable damaged was indeed passed on, then "normal" rates cannot now be measured in PWS. Third, concern exists that placing CWTs in small pink salmon fry may cause damage responsible for some or most of the straying. Consequently, while substantial straying was measured in both oiled and non-oiled areas, clear interpretation of the results is not possible, and the significance of the measured straying remains unknown.

Straying rates of 26% seem high in relation to the concept that salmon normally home. However, virtually no other quantitative information exists on straying rates of wild pink salmon in their natural range for comparison. Reported straying rates in other species of salmon are highly variable. Examples are: Labelle (1992) observed an average straying rate of 2% for five stocks of wild and enhanced coho salmon, with a range of 0-11%; straying rates tended to be lowest for hatchery fish and highest for stocks subjected to certain supplementation practices. Pascual and Quinn (1994) reported highly precise homing of hatchery chinook salmon to the Columbia River even if the fish were transplanted into the river. However, straying within the river was extremely variable among hatcheries, ranging from 1% to 95%, and was influenced by both environmental and genetic factors (Pascual and Quinn 1994). Tallman and Healey (1994) measured the straying rates for chum salmon in two streams located 2 km apart in the same bay; the straying rate from Walker Creek to Bush Creek was about 50%, while the straying rate from Bush Creek to Walker Creek was less than 2%.

The ability of salmon to home (to return to their natal stream to spawn) is probably the most well-known and remarkable characteristic of these fish. This tendency permits the establishment of discrete, locally adapted populations which are the basis of the stock concept in salmon management (McDonald 1981). Not all salmon return to their natal stream, however; some stray to non-natal streams to spawn. Straying is in itself a highly adaptive behavior. It is a mechanism for the colonization of new habitat (Milner and Bailey 1989), as well as for the recolonization of habitat that has been damaged and subsequently restored (Roys 1971; Leider 1989). Alexanderdottir (1987) and Quinn (1984) have speculated that pink salmon, which do not have overlapping generations because of their two year life cycle, may have relatively high rates of straying to provide a spatial population structure as a buffer against the risks inherent in a fluctuating environment.

The occurrence of strays in a spawning population does not necessarily mean that the strays are successful in transferring genetic information into the population. Tallman and Healey (1994) found that the gene flow was substantially lower than the straying rate among three populations of chum salmon, suggesting that strays have lower reproductive success than the native fish. However, higher gene flow was associated with higher straying rates. The rate and pattern of straying can still be considered indicative of the potential level of genetic interaction among populations and of the capacity of the species for recolonization of a site (Pascual and Quinn 1994).

Three possible explanations have been proposed for the high rates of straying observed for pink salmon in PWS. One is that oil exposure of the embryos induced high straying. No information exists on whether the developmental abnormalities associated with such exposure could also include deterioration of imprinting and homing. Previous research on the effects of oil on straying has focused on exposing returning adult salmon to oil for a short period of time (1-2 hours). Short-term exposure to oil had no deleterious effect on homing of either chinook salmon (Brannon et al. 1986) or coho salmon (Nakatani et al. 1985). Short-term oil exposure did cause temporary disorientation in migrating adult pink salmon, but did not prevent the eventual return to the home stream (Dames and Moore 1989). Straying rates observed in PWS by Sharp et al. (1995) were similar for fish from both oiled and non-oiled streams; however, the results were confounded because fry from non-oiled streams may have been exposed to oil as they migrated along oiled beaches.

The second explanation is that CWTs contributed to the observed straying rates. Morrison and Zajac (1987) reported that improperly injected CWTs can damage the olfactory nerves of small chum salmon.

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Pink salmon fry are smaller than chum salmon fry, and thus may be more easily damaged by tag injection. Habicht et al. (*In review*) found that a higher proportion of the tags from pink salmon that had strayed in PWS were not in the ideal location in the head relative to the locations of tags of fish that had homed.

The third explanation is that the straying rates observed were indeed representative of wild stocks in PWS. Sharp et al. (1995) speculated that pink salmon originating from the intertidal reaches of streams may not imprint as strongly as do pink salmon spawned in upstream reaches of a stream, and may thus return to a general region rather than a specific stream. Up to 75% of pink salmon spawning in PWS occurs in intertidal stream reaches. Pascual and Quinn (1994) also found that chinook salmon released into tributaries to the estuary of the Columbia River had higher straying rates than did the same group of fish released from locations higher upstream, suggesting that longer migration time or distance in freshwater may improve imprinting and homing. For pink salmon returning to LPW from Project 95191B that were recovered, Wertheimer et al. (1996) estimated straying rates of 3.7-15%, depending on the assumptions used about frequency of strays in pink salmon escapements within approximately 30 km of LPW. If 80% of pink salmon strays occur within 30 km of the natal stream (Sharp et al. 1995), then total straying rates of 95191B pink salmon could have been as high as 19%. However, these observations are also confounded by coded-wire tagging and by transplant of gametes from their parental origin.

The degree of straying of wild pink salmon is an important issue in the restoration and management of wild pink salmon populations in PWS. Information on the spatial patterns of straying, and the factors that affect them, can have direct bearing on such issues as the genetic interaction of wild and hatchery stocks (Pascual and Quinn 1994). If high straying rates occur naturally, then the genetic structure of the populations in PWS should be relatively homogeneous, and large-scale mixing of wild stocks and the hatchery stocks derived from them should be of minor concern. Restoration of damaged pink salmon runs would thus be expected to occur naturally through recolonization from healthy stream systems. However, if the presence of oil increases straying from normally low levels, then genetic diversity among and within wild stocks could be jeopardized from induced straying, and the genetic damage hypothesized to occur as a result of incubation in oiled substrate could be passed on to pink salmon in streams originally not oiled by the *Exxon Valdez*.

Return Rate

The average return rate was lowest for fish that were exposed to the highest dose of oil in Project 95191B. In 1993, pink salmon were incubated in gravel contaminated with three different amounts of oil and uncontaminated gravel. When they emerged in 1994, they were coded-wire tagged and released. There were four batches of coded-wire tagged fish, and each dose was represented by a single tag code in a batch. Mean survival among groups of unexposed fish was $2.0\pm0.7\%$ compared to $1.6\pm1.1\%$ for groups of fish exposed to the highest dose (281 µg oil/g gravel), and within batches, fish exposed to the highest dose experienced the poorest survival three out of four times.

Gamete Viability

Offspring of parents exposed to oil during Project 95191B had the lowest average survival to eyeing. Three separate experiments were performed, and average offspring survival among progeny of fish exposed to the highest dose was lowest in all three experiments, with differences between unexposed and high dose groups as great as 25%. Unfortunately, statistical verification of the results was prevented in each of the experiments by limitations in the experimental designs. In the first case, the design did not account for an observed interaction between spawning date and treatment, and the two remaining experiments were underpowered. However, the consistency of the results coupled with the field observations (Bue et al. 1996) and reductions in growth indicates the need for more detailed analysis. The designs of the three experiments were hampered by the relatively small numbers of returning fish, but the present study is designed to remedy the problem by releasing much larger numbers of exposed fish.

The primary objective of Study 95191B was to evaluate the heritability of the long-term damage acquired by pink salmon incubated in oiled gravel. This is now included as an objective of 98076. Parents (P1) that were incubated in oiled gravel beginning in 1993 were spawned when they matured in 1995. Their offspring (F1) were incubated in a clean environment and were coded-wire tagged and released in the spring of 1996. When the F1 mature in 1997, they will be spawned and the survival of their offspring (F2) will be evaluated. Any differences in survival of the F2 will be related to differences in the exposure histories of the P1 generation.

A. Objectives

This project has seven major objectives related to straying of pink salmon. The design also permits evaluation of two additional major objectives concerning the effects of oil exposure during incubation on marine survival and gamete viability.

- Determine if oil exposure during incubation affects straying of pink salmon.
 Hypothesis: Oil exposure during embryonic development increases the straying of pink salmon.
- 2. <u>Estimate natural straying rates of two stocks of pink salmon</u>. Accomplishing this objective requires a sampling program that can estimate the total strays within a specific geographic area, and evaluation of the influence on straying of such factors as tagging, stock, and transplant (Objectives 3-6).

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- Determine if coded-wire tagging of pink salmon fry affects straying rate.
 Hypothesis: Coded-wire tagging of pink salmon fry increases the straying of pink salmon.
- Determine if stock type affects the straying rate of pink salmon.
 Hypothesis: Stock origin (upstream vs. intertidal) affects the straying rate of pink salmon.
- 5. <u>Determine if first-generation transplant affects the straying rate of pink salmon.</u> **Hypothesis:** Transplant of gametes from a stream to a hatchery incubation and release site affects the straying rate of pink salmon.
- 6. Develop a synthesis of pink salmon straying research, including the results of this study and use it to evaluate the implications for management and restoration strategies.
- Determine if oil exposure during incubation affects the return rate of pink salmon fry.
 Hypothesis: Oil exposure during embryonic development decreases the marine survival of pink salmon.
- Determine if oil exposure during incubation affects the gamete viability of pink salmon.
 Hypothesis: Oil exposure during embryonic development decreases the gamete viability of pink salmon.
- Determine if reduced reproductive viability due to oil exposure during incubation is heritable.
 Hypothesis: Reduced gamete viability caused by exposure to oil during embryonic development is heritable; progeny of exposed parents will have lower gamete viability than progeny of unexposed parents.

B. Methods

a. Overview

This project has been designed to examine the effects of oil exposure during embryonic development of pink salmon on: 1) straying rate, 2) marine survival, and 3) gamete viability of returning adults. Pink salmon gametes were taken from fish returning to Lovers Cove Creek, an intertidal spawning population on southeast Baranof Island (Figure 1), and from fish returning to LPW from 95191B releases. The embryos were incubated at LPW near the terminus of Sashin Creek. The embryos from Lovers Cove Creek were placed in a controlled simulation of oiled intertidal habitat which occurred in PWS after the *Exxon Valdez* oil spill. Fresh water and salt water for incubation were provided from Sashin Creek and the LPW estuary, respectively. The embryos from 95191B returns were incubated in freshwater with no additional exposure to crude oil. Fry were tagged with CWTs to identify treatments (Table 1) and release site, from the Armstrong Keta. Inc. (AKI) hatchery brood stock return, and at other streams within 50 km of the release site. The cost-recovery fishery at AKI hatchery will also be sampled as a proxy for the commercial fishery. Recoveries of tagged adults returning to the release site will be held and example.

spawned, the tags decoded to identify treatment, and the fertilized eggs will be incubated in a clean avironment to determine gamete viability of fish from the original treatment groups.

Because the effects of oil incubation on straying may be confounded by other factors that could affect straying, the influence of CWTs, stock, and transplant on straying will also be experimentally tested. These comparisons will utilize wild fry emigrating from both Sashin Creek and Lovers Cove Creek, as well as pink salmon fry from the control group of the oil-exposure experiment. The CWT effect will be examined by comparing straying rates of two groups of CWT fry with similar fish marked with fin clips only (Objective 3). The stock effect will be tested by comparing straying rates of Sashin Creek wild emigrants and Lovers Cove Creek wild emigrants (Objective 4). The transplant effect will be tested by comparing straying rates of Lovers Cove Creek wild emigrants with the control group of the oil-exposure experiment (Objective 5). These comparisons will also be repeated for both brood years.

A deterministic model was used to determine the power to detect differences in straying and return rate between oil-exposure treatment groups at the release group sizes and sampling regimes proposed. A number of assumptions were necessary to simulate the numbers of strays available for recovery, including marine survival, effects of oil exposure and marking and tagging on survival, straying rate, and sampling rate in non-weired streams. Details of this model, and of the sampling protocols for returning adults, were presented in the DPD for 97076. Sampling protocols and breeding designs for returning results are reiterated here to incorporate modifications that have been made to the design.

b. Adult recoveries

Sashin Creek Recoveries. To assess the rate of homing vs. straying behavior, returning marked pink salmon will be recovered from natal and non-natal streams on Baranof Island and Kuiu Island (Figure 1). Quantitative sampling will be focused on streams within 30-35 km of Sashin Creek (Table 2). The sampling period will extend from mid-August through mid-October, 1997.

Two of the streams to be sampled have weirs--Sashin Creek and the AKI hatchery brood stock raceway at Jetty Lake Creek in Port Armstrong. Close to 100% of the fish returning to these locations will be sampled. The fish returning to AKI as brood represent 40% of the estimated pink salmon escapement within 30-35 km of Sashin Creek (Table 2). AKI Hatchery personnel will be contracted to examine all pink salmon that enter the facility and are spawned, in order to identify and recover strays from the various treatment groups. Any fish with a missing adipose fin will be retained for scanning for CWT and examination for missing pelvic fins.

All pink salmon entering Sashin Creek will be checked for missing adipose fins. The weir will be operated so that fish cannot leave after entering, in order to provide a precise count of the number of fish in the creek. Fish with adipose fins will be passed into the creek. Fish without adipose fins will be checked for a missing pelvic fin. Pink salmon entering Sashin Creek that are missing a right pelvic fin were marked as wild fry emigrating from Sashin Creek. These fish will be sexed, measured, and passed into the stream. All other fish with adipose clips will be retained until mature for spawning. These pink salmon will be marked with an individually coded Floy tag, so that return timing can be determined for each treatment when the fish are killed and spawned. The fish will be placed in a temporary holding pen adjacent to the weir, and transferred at high tide to estuarine netpens where they will be held until maturity. At that time, the fish will be killed, scanned for a tag, and the tag removed and decoded (if

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present). A CWT fish will be considered to have homed to Sashin Creek, unless the fish is from the Lovers Cove wild fry group.

Eight unweired steams within 30-35 km of Sashin Creek will be sampled for frequency of tagged fish and estimation of total escapement. These streams represent 60% of the estimated total escapement within 30-35 km of Sashin Creek (excluding the return to Sashin Creek from the total). Thus 86-90% of the total escapement within this distance will be sampled quantitatively (Table 2). Based on the observations of stray pink salmon in PWS, we assumed that the number of strays will decline with increasing distance from the natal stream. Sharp et al. (1995) recovered 79% of their total strays 30 km or less from the natal stream. We used this figure to estimate the number of strays that will be available in pink salmon streams within approximately 30 km from LPW, and developed a sampling design to intensively sample fish in streams within this distance. We assume that strays will be distributed proportionately to the escapement within this 30-km area. More distant sites will also be sampled, but at a lower effort.

A four-person crew based at LPW will sample Lovers Cove Creek and Borodino Creek. The streams will be accessed from LPW using a 5.1-m Boston Whaler skiff, and will be checked twice weekly from September 1-October 15. Each carcass will be counted, checked for a missing adipose fin, and checked for a Ketchum operculum tag. The operculum tag is a critical component of the escapement estimation technique for each stream, described below. If a fish is missing the adipose fin, the entire fish or the head and the pelvic girdle (with fins attached) will be removed for later scanning for the presence of a CWT or a pelvic fin clip. At the time of sampling, the condition of the head and the number of eyeballs present will be noted to determine if differential loss rates of coded-wire tags are associated with carcass condition. If a fish is not fin-clipped, it will be cut in half to identify as already sampled on subsequent surveys. In addition to the systematic sampling of these two streams, this crew will check carcasses in other minor pink salmon streams from Port Herbert to Port Conclusion as time permits. This sampling will be for frequency of tags only; escapements will not be estimated. On these streams, carcasses will be counted, checked for fin-clips, fin-marked carcasses will be retained, and unmarked carcasses will be cut in half.

The other six unweired streams to be sampled systematically are located 20-33 km from Sashin Creek. These include watersheds on the east coast of Baranof Island and the west coast of Kuiu Island (Figure 1). The 30-km arc does not intersect all of Tebenkof Bay on Kuiu Island. Tebenkof Bay has four major embayments. We included in Stratum 2 streams in those embayments (Piledriver Cove and Thetis Bay) that are intersected by the 30-km arc, even if the streams were slightly (< 3 km) east of the arc. These streams will be sampled by four-person crews based on two charter vessels for both the occurrence of tagged fish and to estimate total escapement. The vessel-based operation will allow safe transit of Chatham Strait to sample streams in Tebenkof Bay. Port Malmesbury, and Patterson Bay (Figure 1). The crew will be able to sample during the day, then move safely to the next location after completing a survey. Each crew will be responsible for three of the streams.

Other pink salmon streams located 35-50 km from Sashin Creek will be sampled for frequency of tagged fish on an intermittent basis. These include watersheds on the east and west coast of Baranof Island, and on the west coast of Kuiu Island. The stream with the largest ADFG escapement index count in each of four bays will be sampled: Red Bluff Bay, Rowan Bay, Bay of Pillars, Gut Bay, and the inner portion of Tebenkof Bay. If time permits, streams in Table Bay on southwest Kuiu Island and Puffin Bay and

Branch Bay on southwest Baranof Island will also be surveyed (Table 3). The survey crews will not attempt to estimate escapement for these streams; the emphasis will be on checking carcasses for tags and tag occurrence rate as a check of the assumption that stray recovery rate is proportionate to distance from natal stream. It may be possible, however, to get a rough estimate of sampling proportion using ADFG aerial survey counts for streams on which escapements were estimated, and generating an average expansion factor for the sampling year for the aerial surveys.

These streams will be sampled by the charter vessel crews when and if time permits. Because of differences in run timing some of the systems, we expect periods when time requirements for systematic sampled streams are low, and the more distant streams can be included in the sampling. In addition, the NOAA vessel *R/V John N. Cobh* will be used to support a sampling crew for these more distant streams over the period September 19-30. This survey crew will count and examine as many pink salmon carcasses as possible for a missing adipose fin. If a fish is missing its adipose fin, the fish will be retained for later scanning for the presence of a CWT or a pelvic fin clip. Carcasses with adipose fins will be cut in half so that they can be identified on subsequent surveys as having been previously examined.

Tag Location. The location of CWTs within the heads of returning adult pink salmon will be examined to determine whether straying was influenced by where the tag was placed within the snout. Heads from adipose fin-clipped adults will be X-rayed so that tag location in fish that stray can be compared with tag location in fish that home. Samples of up to 100 heads will be X-rayed from each of three recovery categories--Sashin Creek, Lovers Cove Creek, and other area streams. The samples from Lovers Cove Creek and the other area streams will be from spawning or spawned-out fish. At Sashin Creek, however, because all adipose fin-clipped fish returning to the weir will be held alive after capture, and the tag will be removed and decoded at spawning in order to identify the treatment group, only fish that die in the holding net prior to spawning will available to X-ray for tag location.

Estimation of Escapement. In the 97096 DPD, we proposed estimating escapement into the systematically sampled unweired streams with a carcass mark/recapture approach that has been previously applied for pink salmon (Parker 1968) and chinook (Sykes and Botsford 1985). However, this technique was used in an unrelated study of pink salmon in the Auke Bay area in 1996, and was found to seriously underestimate the pink salmon escapement into short streams with significant intertidal spawning (Don Mortensen, Auke Bay Laboratory, personal communication). As a result, we have modified our approach, and will use a Petersen or Schaefer estimate based on tagging live fish and recovering marked carcasses. Simulation modeling was used to determine appropriate mark rates (Appendix 1). Fish will be captured by seining in the upper intertidal, so that both upstream and intertidal spawners will be represented. Up to 300 fish will be marked each week, using cryptic operculum tags. Both operculums will be tagged, so that tag loss rates on carcasses can be computed. The tags will be individually numbered, which will allow use of either the simple Petersen or Schaefer estimator (Appendix 1). A variance estimator is available for the simple Petersen approach; bootstrapping can also be used to develop empirical 95% confidence intervals for the estimate (Appendix 1).

c. Fisheries Recoveries

The number of fish harvested in the commercial fishery is not critical to our estimates of return rate and straying if the assumed survival rates are representative of post-fishery survival, and if the treatment groups are equally distributed in the fisheries. However, if oil does affect homing behavior, then exposed groups might mill around more and thus be differentially vulnerable to the fishery. Pink salmon returning to Sashin Creek are thought to enter Chatham Strait from the south (Hoffman 1982). Adult tagging studies indicate that some Sashin Creek fish move up Chatham Strait as far as Frederick Sound before returning to their natal stream. Fish harvested in lower Chatham Strait, however, are exclusively of lower Chatham origin (Hoffman 1981). Over the last four years, pink salmon harvest in area 109 from Frederick Sound to Cape Ommaney has averaged 17 million fish (pers. comm., H. Savikko, ADFG, Juneau). Fishery exploitation of Sashin Creek pink salmon is thought to be around 30% (pers. comm., Ben Van Alen, ADFG, Juneau). We estimate that the tag incidence rate for each treatment would be 1 in 30,000-50,000 fish in the general harvest area.

Sampling this large and widely-dispersed fishery would be expensive and difficult. At this time, we propose instead to sample the AKI Hatchery cost-recovery fishery as a proxy for the common property fishery. Projected harvest for this fishery is 1,000,000 pink salmon (pers. comm., Dana Owens, Armstrong Keta Inc., Juneau). We can reasonably expect to cost-effectively sample up to 30% of this harvest to test whether treatment groups were exposed to differential harvest rates. No estimate of the power of the test is possible. At this time, AKI plans to deliver its fish to a floating processor located near the hatchery (pers. comm., Dana Owens, Armstrong-Keta Inc., Juneau). Sampling this harvest will require arranging with the processor to permit two samplers to examine pink salmon and remove those with a missing adipose fin as the fish are delivered to the processing lines. The samplers will be housed at Port Armstrong or on the processor for the duration of the harvest (3-4 weeks); fish with missing adipose fins will be picked up and taken to LPW for examination for tags and fin clips and tag recovery and decoding at least twice weekly.

d. Analysis of Straying and Survival

The G-test of independence (Sokal and Rohlf 1981) will be used to test for statistical differences (P = 0.05) in straying between treatments for the oil-exposure and tagging-effects experiments (Objective 1, 3). The number of strays observed in all escapement sampling strata and the number of homing fish recovered at Sashin Creek weir will be compared between treatments. For the oil-exposure test (Objective 1), if a significant difference is detected between the three groups, all three possible paired comparisons will be made, with the rejection criterion adjusted for multiple comparisons so that overall P = 0.05. For the effect of tagging experiment (Objective 3), two-way contingency tables comparing the CWT and fin-marked releases will be analyzed.

Comparisons of straying rates between Lovers Cove Creek wild fish and Sashin Creek wild fish (Objective 4), and Lovers Cove Creek wild fish and transplanted Lovers Cove Creek fish (Objective 5) cannot be tested with the G-test because we will not have a complete count of the number of homing fish at Lovers Cove Creek. The total homing to Lovers Cove must be estimated by expanding observed tags by the sampling fraction. Comparisons for these objectives must thus be made using the estimated straying rates and associated variances, rather than observed recoveries.

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Straying rates will be estimated for the various treatment groups by estimating the total number of strays, 'S, in non-natal streams within the 30-km sampling region, and the total number of homing fish, H, in the natal stream (Objective 2). S is calculated by

$$S_i = (\Sigma S_{ij}) / p,$$

where s_{ij} is the estimated number of strays for a particular treatment, *j*, in each non-natal stream surveyed, *I*, and p is the proportion of the escapement sampled within 30 km. Each s_{ij} is the observed number of strays expanded for the proportion of the escapement sampled for tags in stream *I*. H is the count of homing fish to Sashin Creek for all treatments, except Lovers Cove Creek wild fish; in that case, H is the observed number of homing fish in Lovers Cove Creek, expanded for the proportion of the escapement sampled for tags. The straying rate, *f*, is then

$$f_{\rm j} = S_{\rm j} / (S_{\rm j} + H_{\rm j}).$$

The variance of this proportion can be calculated from the variances of S and H. For S,

$$\operatorname{var}(S_i) = \Sigma \operatorname{var}(S_{ii}).$$

The variance of each s_{ij} is derived from the variance of the escapement estimate used to calculate the proportion sampled for tags in stream *I*. For H, var (H) = 0 for Sashin Creek, because H is a total count. At Lovers Cove Creek, the variance of H is also derived from the variance of the escapement estimate used to calculate the proportion sampled. Variance of *f* is then

$$var(f_{1}) = [H^{2}(var(S)) + S^{2}(var(H))]/(S + H)^{4}.$$

A linear logistic model will be used to describe the relationship between straying rates and various factors, following the model used by Labelle (1992) for coho salmon. The objective is to predict the probability of straying for particular combinations of treatment, population, and geographic factors. The model used is

$$E[S/(S+H)] = \exp(b_0 + b_1 x_1 + b_2 x_2 + \dots) / [1 + \exp(b_0 + b_1 x_1 + b_2 x_2 + \dots)]$$

where f is the frequency of straying, b_n are parameters estimated by the model, and x_n are the predictor factors. We will use oil treatment, mark type, stock, transplant, distance from natal stream, direction from natal stream, and magnitude of non-natal stream as predictor factors.

Effects of oil exposure on return rate (Objective 7) will be tested using the G-test. The contingency table for the comparison will be a 2 x 3 table, comprised of the three groups and the number of survivors and non-survivors for each group. The number of survivors for a treatment will be the sum of the observed number of tags at Sashin Creek weir, the observed number of tags recovered as strays, and the observed number of tags in the AKI fishery. The number of non-survivors for a treatment will be the number of "good" tags released (the number of fish tagged for a treatment adjusted for tag retention) minus the number of survivors. If a significant difference is detected between the three groups, the three possible paired comparisons will be made, with the rejection criterion adjusted for multiple comparisons so that overall P = 0.05.

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In addition to return rate, the size, fecundity, return timing, and sex ratio of the treatment groups will be compared. Analysis of variance will be used to examine size, fecundity, and timing. A G-test similar to the one for return rate will be used to analyze sex ratios.

e. Reproductive viability

Reproductive viability will be determined for two groups of returning spawners: (1) the P-1 fish that were exposed to oil in 1995 as embryos; and (2) the F-1 fish whose parents were exposed to oil as embryos in 1993. The maturing adults will be checked every 3-4 days for ripeness, starting September 8. Ripe fish will be killed and bled, and labeled by the Floy tag number (designating capture time). The fish will be measured and eggs or milt extracted and put on ice, identified by fish. If the fish is LV clipped, origin is from the P-1 controls. If the fish has a CWT, the tag will be extracted and decoded so that the fish can be identified as to P-1 or F-1 treatment.

P-1 returns. Two experiments will be performed to evaluate the reproductive viability of the P-1 fish. The objective of the first experiment will be to determine the average offspring survival within dose of parents exposed to different amounts of oil during incubation. The objective of the second experiment will be to estimate how much of the variability in offspring survival is due to individual variation and male/female effects. The benefit of the first experiment is that all the possible crosses within an exposure group can be made and the overall average survival measured. The primary source of variation will be measurement error and no information will be available on individual variation. The benefit of the second experiment is determine individual variability and thus provide control for the interpretation of the results of the first experiment, as well as male and female effects. The first experiment will measure survival to fertilization and eyeing. The second experiment will measure embryo survival to fertilization, eyed, and emergent fry stages. The numbers of defective or dead progeny will be compared between treatment groups. Because these gametes will not be incubated in an oiled environment, any observed increases in mortality or defective individuals can be attributed to oiling effects upon the first generation. To provide gametes for the two experiments, each P-1 female will be split into two groups: approximately 400 eggs will be allocated to Experiment 1, and 800 eggs to Experiment 2.

Average offspring survival will be estimated in the first experiment by measuring the survival in pools of gametes comprising all the possible pairwise crosses. On each day of spawning, two egg pools will be formed per treatment. Depending on the number of spawners available, each egg pool will consist of 6-11 females. Equal subsamples of approximately 100-150 embryos will be randomly selected from the egg pools; the number of subsamples formed from an egg pool will be equal to the number of females contributing to it. Each subsample of eggs from the pool will be fertilized with milt from a different male from the same treatment group. After mixing with milt, the eggs will be repooled, then placed in an individual cell within a Heath tray for incubation to the eyed stage. Thus, the average survival of a treatment group on a given day will be the mean of the average survivals in each of the two subgroups. We will plan for a maximum of 12 pools of embryos per treatment. This will require 96 cells per treatment, assuming an average of 8 pairs of spawners per pool. By using trays partioned into eight cells, 36 trays in three stacks will be required for Experiment 1.

The estimates of mean survival of the treatment groups will be compared with *t* tests after assuming that variability between groups of like-treated incubators is negligible. A *t* test between, for example,

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treatment 1 and 2, when there are d spawning days, q treatments, p subgroups per treatment, and r cells per subgroup will have the following form:

$$t_{(p-1)\cdot q\cdot d)df} = \frac{\frac{1}{d}[\overline{sv_{11}} + \dots \overline{sv_{1d}} - \overline{sv_{21}} \dots - \overline{sv_{2d}}]}{\sqrt{\frac{1}{d^2} * \frac{s_c^2}{p*r} * 2*d}}$$

where,

$$SV_{ij}$$
 = Survival rate for treatment I on day j

 s_c^2 = Combined Between-Pools Mean Square obtained by ANOVA.

Comparisons will be made between each of the doses and the control and the overall α will be maintained at 0.05.

For the second experiment, fish from each oil dose and from the control will be mated using a fullycrossed half-sib design (Falconer 1981). In this design, approximately 400 eggs from each exposed female and control female are each split into two aliquots. One aliquot from each female is fertilized with aliquots of sperm from the same oil-exposed male, and one aliquot from each female is fertilized with aliquots of sperm from the same control male. This 2 x 2 breeding matrix will be replicated so that every female is represented in a breeding matrix or until there are 100 breeding matrices for each treatment, whichever is greater. Each half-sib family will be incubated in an individual, fry type container placed in a Heath tray. Nine containers can be put into a single tray. For 100 replicates of the two possible crosses (low dose X control and high dose X control), a total of 800 individual containers and 90 trays in six stacks will be required.

F-1 returns. Because fewer fish from the F-1's are expected, the F-1 experiment will use only fully crossed half-sib design. This design will permit filling out replicates of the spawning matrix when less fish are available than are needed for the pooled design of P-1 Experiment 1. This 2 x 2 breeding matrix will also be replicated so that every female is represented in a breeding matrix or until there are 100 breeding matrices for each treatment, whichever is greater. For 100 replicates, a total of 400 individual containers and 45 trays in three stacks will be required.

Embryos should have reached the eyed-stage of development by early November. At that time, the embryos will be shocked to coagulate the yolk of dead eggs, and live and dead eggs counted to assess survival. Live embryos from the P-1 and F-1 half-sib replicates will be returned to their containers and incubated until April. At that time, the number of fry will be enumerated from each container to determine survival to the fry stage, and the number of gross lesions and abnormalities will be counted.

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Cooperating Agencies, Contracts and Other Agency Assistance

Experimental design to determine oil exposure impacts has been developed with ADFG and UAF researchers. UAF researchers will be directly involved with the breeding experiment analysis.

SCHEDULE

A. Measurable Project Tasks for FY 98

October :	Complete stream surveys and weir sampling.
November:	Evaluate gamete survival to eyed stage.

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December:	Data analysis on return rates and characteristics, straying, and reproductive viability.
January:	Present preliminary analyses at EVOS workshop.
April:	Evaluate gamete survival to emergent fry stage.
April:	Complete 1997 Annual Report.
September:	Complete Draft of Final Report.

B. Project Milestones and Endpoints

Milestones

Completion Date

Spawning of 1995 brood adults	Completed
Oil exposure of 1995 brood embryos	Completed
Marking of 1995 brood fry	Completed
Recovery of 1995 brood marked fish	Oct 1997
Estimation of 1997 natal, non-natal stream escapements	Oct 1997
Spawning of 1997 brood adults	Sep 1997
Determination of 1997 brood gamete viability	Apr 1998

Endpoints

- 1. Objective 1: Determine if oil exposure during incubation affects straying of pink salmon. Completion Date: January 1998.
- Objective 2: Estimate natural straying rates of two stocks of pink salmon. Accomplishing this objective requires a sampling program that can estimate the total strays within a specific geographic area, and evaluation of the influence on straying of such factors as tagging, stock, and transplant (Objectives 3-6).
 <u>Completion Date:</u> January 1998.
- Objective 3: Determine if coded-wire tagging of pink salmon fry affects the straying rate of pink salmon.
 <u>Completion Date</u>: January 1998.

- 4. Objective 4. Determine if stock type affects the straying rate of pink salmón. Completion Date: January 1998.
- 5. Objective 5. Determine if first-generation transplant affects the straying rate of pink salmon. Completion Date: January 1998.
- 6. Objective 6. Develop a synthesis of pink salmon straying research, including the results of this study, and use it to evaluate the implications for management and restoration strategies. <u>Completion Date</u>: December 1998.
- Objective 7. Determine if oil exposure during incubation decreases the marine survival of pink salmon fry. <u>Completion Date</u>: January 1998.
- Objective 8. Determine if oil exposure during incubation decreases the gamete viability of pink salmon.
 <u>Completion Date</u>: July 1998.
- Objective 9. Determine if reduced reproductive viability due to oil exposure during incubation is heritable.
 <u>Completion Date</u>: July 1998.

C. Completion Date

This project will extend over the entire life-history of the 1995 brood of pink salmon and will also include the egg/alevin life-history stage of their progeny. Oil exposures and marking of experimental groups will be completed in 1996. Recovery of returning adults will be completed in 1997. Evaluation of the viability of gametes of returning adults will be completed in 1998. The final report summarizing the results and detailing the accomplishment of the project's restoration objectives will be submitted in 1998.

PUBLICATIONS AND REPORTS

In FY98, six peer-reviewed publications are planned:

- Wertheimer et al. Homing and straying of pink salmon exposed to oiled gravel during embryonic development.
- Wertheimer et al. Effects of incubation in oiled substrate on the return rate, size, and migration timing of pink salmon.
- Thedinga et al. Effects of coded-wire tagging and transplant on the homing and straying behavior of two stocks of pink salmon.

Heintz et al. Effects of incubation in oiled substrate on the reproductive viability of pink salmon.
Heintz et al. Heritability of reproductive damage in pink salmon caused by incubation in oiled substrate
Maselko et al. Comparison of Peterson and Schaefer mark/recapture approaches for assessing pink salmon escapements.

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Annual progress reports will be submitted in April of 1996, 1997, 1998.

1996 annual report: Details of the spawning of adult pink salmon in September, 1995, and the incubation of embryos (1995 brood). Completed.

- 1997 annual report: Details of the tagging and release of pink salmon fry (1995 brood); analysis of 44 GC/MS samples (1995 brood); survival of embryos to fry emigration by treatment.
- 1998 annual report: The recovery and spawning of adult pink salmon (1995 brood) in September and October, 1997; and preliminary analysis of straying rates, marine survival, and gamete viability of the 1995 brood.

The final report will be submitted in December, 1998.

PROFESSIONAL CONFERENCES

American Fisheries Society 1998 Annual Meeting

NORMAL AGENCY MANAGEMENT

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

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

Research by NMFS on effects of oil exposure to pink salmon has been closely coordinated with concurrent research efforts by ADFG and UAF. This project has combined Restoration Studies --191B and --076 to ensure full coordination and economic efficiency. ADFG and UAF researchers will participate in the design of the breeding experiments.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

This project has continued to evolve since its original funding in FY95. Substantial changes have been made in response to peer review comments and the results of the field operations. In 1997, the project was reduced from a two brood-year study ending in 1999 to a one brood-year study ending in 1998. This was done to constrain costs of the 076 research. The 1995 field work identified the need for increased effort on stream surveys for recovering tagged fish and estimating escapements (Wertheimer et al. 1996). Additional changes to the sampling protocols in FY-97 have been identified above under Project Design.

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PROPOSED PRINCIPAL INVESTIGATOR

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Treatment	Mark/ +	k/ - Number Time Strata Marked		Number Fry Marked		
	Туре	Proposed	Released	Proposed '	Released	
Exposure High Dose	Ad-CWT	7	7	70,000	.70,314	
Exposure Low Dose	Ad-CWT	7	7	70,000	69,441	
Exposure Control	Ad-CWT	7	7	70,000	65,409	
Exposure Control	Ad-RP	1	1	70,000	56,435	
Sashin Creek Wild	Ad-CWT	6	6	60,000	62,053	
Sashin Creek Wild	Ad-LP	1	1	60,000	58,469	
Lovers Cove Wild	Ad-CWT	. 6	7	60,000	76,834	
F-1 High Dose	Ad-CWT	I	1	10,000	8,862	
F-1 Control	Ad-CWT	1	1	10,000	10,932	
TOTAL				480,000	478,749	

Table 2. Proposed and actual number of groups and pink salmon fry marked at Little Port Walter for Project 076. Ad = adipose fin; CWT = coded-wire tag; RP = right pelvic fin; $LP \doteq$ left pelvic fin.

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Table 2. Weir and peak aerial survey counts for pink salmon streams within approximately 30 km of Little Port Walter. The column for 1997 surveys indicates whether escapement will be both estimated and sampled for tagged pink salmon returning in 1997. The adjusted peak count is the 10-yr mean peak count for unweired streams expanded by 2.5.

Stream Number	Stream Name	1997 Surveys	10-yr Mean Peak Count	Adjusted Peak Count
	AKI Weir ¹	Yes	85,712	85,712
109-10-006	Sashin Creek ²	Yes	29,064	72,660
109-10-007	Borodino Creek	Yes	NA	NA
109-10-009	Lovers Cove Creek	Yes	26,973	67,432
109-10-023	Deep Cove NW Head	Yes	10,336	25,840
109-10 - 028	Parry Creek	Yes	11,220	28,050
109-52-050	Pillar Bay SW Side	No	1,304	3,260
109-62-003	Piledriver Cove Cr.	Yes	8,118	20,295
109-62-005	Happy Cove Creek	No	300	750
109-62-028	William Creek	Yes	5,446	13,615
109-62-029	Wolf Creek	Yes	7,973	19,932
109-62-030	Thetis Bay SW Head	No	1,693	4,323
109-62-031	Thetis Bay Salt Chuck	No	1.439	3,598
109-62-034	South Explorer Basin	No	125	318
109-62-036	Neal Creek	No	2,546	6,365
109-62-038	Gedney Harbor	No	2,350	5,875
109-63-001	God's Pocket West	No	779	1,948
109-63-002	God's Pocket North	No	553	1,383
109-63-003	Malmesbury W of Joyce	No	1,500	3,750
109-63-004	Malmesbury NW Joyce	No	633	1,582
109-63-005	Joyce Creek	Yes	7,533	18,832
109-63-007	Malmesbury N Arm E	No	603	1,508

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Table 2. (continued)

109-63-009	Malmesbury N Arm S	No	17	42
109-63-012	Malmesbury Lake Creek	No	1,689	4,222
109-63-015	Malmesbury: S, Arm S	No	638	1,595
109-6 3- 017	Malmesbury S Arm S	No	629	1,573
1 09-63- 020	Tavin Creek	No	417	1,042
	Total for Area ³		180,524	322,842
	Total, Surveyed Streams ³		163,311	279,708
	% Total Surveyed 1997 ³		90.5%	86.6%

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'AKI = Armstrong Keta Incorporated. Numbers are weir counts of fish entering hatchery adult capture and holding traps.

²Numbers are from aerial survey counts. Weir count at Sashin Creek in 1995 was 117,000.

³Excludes Sashin Creek

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Stream Number	/ · Name	Average Peak Count
109-20-006	Gut Bay	2,260
109-52-007	Rowan Cr., Rowan Bay	20,196
109-52-055	Kwatahein Cr., Bay of Pillars	7,769
109-62-013	Alecks Creek - Tebenkof	30,938
109-20-016	Red Bluff Bay	104,400
113-12-001	Branch Bay	*
113-11-009	Puffin Bay	*
109-61-011	Table Bay	325

Table 3. Stream number, name, and average peak aerial survey count for streams located in bays 35-50 km from Sashin Creek.

* These streams are not regularly surveyed by ADF&G, no estimates of escapement exist.

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Figure 1. Map of Little Port Walter and vicinity.

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Appendix 1

Comparison of Schaefer and Petersen Estimators for Estimating Pink Salmon (Oncorhynchus gorbuscha) Escapements.

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Introduction:

Project 97097 proposed using a carcass mark-recapture sampling design to estimate escapements of pink salmon to unweired streams. This approach incorporated a carcass mark-recapture design and the Jolly-Seber estimate was used as the population estimator. However, surveys in the Auke Bay area in 1996 indicated that carcass marking seriously underestimated escapement due to frequent flushing out of the stream system. To compensate for the dynamic nature of the streams, a live fish tagging - carcass recapture sampling design is proposed. The Jolly-Seber estimate could no longer be used since it assumes marking during the sampling period. In the revised design the sampling takes place after the tagged fish die.

Pink salmon escapements may be regarded as a closed population since all fish can be examined as they enter the stream system and sampling is done throughout the spawning area. The Jolly-Seber estimate assumes an open, constantly changing population (Seber 1982). This would be true if the creek was sampled during a time period that did not cover the extent of the run, or the extent of the spawning grounds. However, when marking and sampling take place over the time span of the run and throughout the spawning area, all fish would have effectively passed through the marking area and ended up as carcasses in the sampling area. Therefore over the course of the sampling all fish have the potential of being examined. There is a fixed number of spawners escaping into the stream system, and once the run is complete this number will not change.

Since pink salmon escapement can be regarded as closed, the Petersen estimate is the most attractive of the mark-recapture estimators. There are two closed population estimators that are appropriate for this design, the Schaefer and Petersen. The Schaefer stratifies the population spatially or as in this case temporally and estimates the number of fish in the stream at the time of each marking event. The total escapement is then the sum of the individual estimates. The Petersen uses only the final total number of fish tagged, proportion recovered, and carcasses sampled for the escapement estimate (Seber 1982).

This model demonstrates the effect of the number of fish tagged and the proportion of tags recovered on the population estimate. Additionally a comparison and contrast between the Schaefer and Petersen estimates is made in order to demonstrate their applicability.

Methods:

The pink salmon escapement model of the average expected stream life cycle was based on observations made over numerous years at Sashin Creek, Auke Creek, and Prince William Sound (Olsen and McNeil 1967; Vallion et al. 1981; Sharr et al 1993). The total escapement period was set to 45 days with 80% of fish dying eight days after entering the stream (see figure 1).

The population is divided into two distributions, both composed of the same individuals, but temporally spaced: the marking distribution and the capture distribution. The marking distribution is composed of

Prepared 4/9/97

live fish arriving at the creek mouth, and the capture distribution is composed of the fish that died after entering the stream. Ideally the two distributions are equal, but if marking causes live fish to exit the stream after tagging, or when marks are lost, the sampling distribution becomes a subset of the marking distribution. This results in overestimation of the population size. Other than examining adjacent streams for tagged fish, we cannot control for straying induced by tagging. However, we can control for tag loss by double tagging live fish. We can calculate a tag loss correction factor using the proportion of carcasses found with one tag missing (Seber 1982).

The simulated population estimate was derived by marking live fish over five events and measuring the proportion of marked carcasses in the recovery distribution over seven recovery events. Marking and sampling are done every four days. However, sampling does not take place until after the second marking event when tagged fish first start dying off, thereby entering the sampling distribution. The last marking event takes place on the 28th day of the run, whereas sampling occurs until the 44th day.

While the Schaefer (N_s) estimates the number of fish at each marking event (then summed to obtain the total population), the Petersen (N_p) estimates the whole population at once (Seber 1982). Thus:

$$\hat{N}_{s} = \sum_{i=1}^{t} \sum_{j=1}^{u} \frac{n_{j} m_{i} C_{ij}}{C_{ij} C_{ij}} \qquad \hat{N}_{s} = \frac{\sum_{i=1}^{t} m_{i} \sum_{j=1}^{u} n_{j}}{\sum_{i=1}^{t} \sum_{j=1}^{u} C_{ij}} \qquad s = \frac{\hat{N}^{2} (\hat{N} - \sum_{i=1}^{t} \sum_{j=1}^{u} C_{ij}) (\hat{N} - \sum_{i=1}^{t} m_{i}}{\sum_{i=1}^{t} \sum_{j=1}^{u} C_{ij}} (\hat{N} - 1)$$

where,

 m_i = number of fish marked at time I c_{ij} = number of carcasses recovered at time j that were marked at time I n_j = total number of carcasses recovered at time j t = total number of marking events u = total number of recovery events

Variance could not be computed for the Schaefer model because no variance estimator is available for an unbalanced design (Seber 1982). Therefore only the Petersen variance was calculated to demonstrate how it is affected by the marking effort and the proportion of tags recovered. We used the removal variance estimator since every carcass that was examined will be chopped as to preclude future recovery.

To observe the model's sensitivity to the marking effort and the proportion of tags recovered, three scenarios of 100, 200, and 300 tagged fish per marking event were bootstrapped 1,000 times in a Lotus spreadsheet. Although the number of fish tagged was predetermined for each iteration of the model, the probability of recovering a fish at each of the sampling events was assigned at random. This allowed for unforseen events (i.e. floods) that flushed out most of the carcasses, resulting in unusually low recoveries during certain sampling events. Alternatively high recoveries would occur during other sampling events.

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Results:

The Schaefer estimator produced more outliers than the Petersen. Errors in the estimation were especially large when a whole strata of tagged fish was never recovered (Figures 2, 3). When a whole strata of tagged fish was lost, the escapement was calculated based on the remaining marking events because the population estimate based on the fish marked at time *I* had to be assumed to be zero. When $c_{i} = 0$ the population was underestimated. The Petersen estimator, however, was unaffected by whole strata loss, as the total proportions of marked to unmarked carcasses remained unchanged.

The accuracy of the estimate was directly proportional to the marking effort and the proportion of marked carcasses recovered (Figure 2). The variance of the Petersen estimator was affected by the number of fish marked at a marking event (M_i) and the proportion of fish recovered. The variance increased three fold when the number of fish tagged decreased from M_i =300 to M_i =100 marks per marking event at all tag recovery proportions. However the variance only increased 1.5 times when M_i was decreased from 300 to 200. The proportion of tagged fish recovered had an even greater effect on the variance. The variance decreased from 4,300,000 at 15% recovery to 170,000 at 75% recovery at M_i =300, and displayed an exponential trend (Figure 2).

Discussion:

The Petersen population estimate appears to be more precise than the Schaefer estimate (Figures 2, 3), even though in the modeled population, the strata were based on recovery periods, with each strata having different capture probabilities. This is surprising because the Schaefer estimator is recommended when stratification of the population is suspected. The sampling design optimized for the Schaefer design requires the additional cost of utilizing separate tag codes for each of the marking events. This makes for more limited choice of tags and requires additional time to record and decode the tags.

Unless the Schaefer design has an equal number of tagging and recovery events, there is no available variance estimator. It is possible to force a balanced design in order to obtain a variance estimate, by pooling adjacent strata with similar recovery probabilities (Seber 1982). We did not pool the strata to calculate the variance, therefore it is unclear as to whether the variance would be smaller for the Schaefer than for the Petersen design. However, the variance estimators obtained through the bootstrapping of the model resulted in lower estimates for the Petersen than the Schaefer model (Figure 2).

Sampling effort must be divided between marking and recovery efforts. At the beginning of the run, all of the effort will be put into marking fish due to the time lag before entering the spawning grounds. Recovery effort should not start until after marked fish start dying. In the middle of the run, when the escapement rate is highest, the sampling effort should be equally spread between marking and recovery.

Great care should be taken to ensure that marked and unmarked carcasses have the same capture probabilities. Therefore the samplers should be very careful not to search out the tagged carcasses. The use of cryptic tags, which will require the samplers to closely examine each carcass in order to observe a tag, will greatly reduce sampling bias. However, whenever a fish attracts a sampler's attention because of a tag, the area around that recovery should be intensely surveyed. If the tag recoveries were made as

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the result of the sampler noticing the tag, however, some form of an adaptive sampling scheme would have to be utilized.

There are advantages to group-specific or individual-specific tagging, even though the Petersen provides a more accurate estimate without requiring such detailed tagging. In addition to providing data for a population estimate, individual-specific tagging can also be used to describe the escapement distribution through time, and, if/recovery location is recorded, the spatial distribution of spawning through time.

Project 98076

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- Heard, W. R. 1991. Life history of pink salmon. Pp. 119-230. In C. Groot and L. Margolis (eds.) Pacific Salmon Life Histories. University British Columbia Press, Vancouver.
- Olsen, J. M. and W. J. McNeil. 1967. Research on pink salmon at Little Port Walter, Alaska, 1934-64. U.S. Fish Wildl. Serv. Data Report 17.

Ricker, W.E. 1958. Handbook of computations for biological statistics of fish populations.

Seber, G. A. F. 1982. Estimation of animal abundance and related parameters.

- Sharr, S., D. Sharp, and B. G. Bue. 1993. Pink salmon spawning escapement estimation in Prince William Sound. Pp. 124-127. In Exxon Valdez Oil Spill Symposium Abstracts. Oil Spill Public Information Center, Anchorage, Alaska.
- Vallion, A. C., A. C. Wertheimer, W. R. Heard, and R. M. Martin. 1981. Summary of data and research pertaining to the pink salmon population at Little Port Walter, Alaska, 1964-80. NWAFC Auke Bay Laboratory Processed Report 81-10, Juneau, Alaska.



Figure 1. The hypothetical pink salmon escapement. The sampling design was applied to this modeled population. Fish available for marking (marking distribution) are represented by "Live fish in stream" graph. Tag recovery sampling is done from the "Total fish mortality" distribution.







Figure 3. Probability distributions of the estimated population sizes for the Petersen and Schaefer estimators based on 1,000 iterations. M is the number of live fish tagged at each of the five marking events.

Revision 25-97 approved TC 8-6-97

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
		1						
Personnel	\$264.7	\$166.1						
Travel	\$29.9	\$21.7						
Contractual	\$170.2	\$29.0						
Commodities	\$53.6	\$28.5						
Equipment	\$8.4	\$0.0		LONG RA	NGE FUNDIN	IG REQUIREN	MENTS	
Subtotal	\$526.8	\$245.3	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$51.6	\$26.9	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$578.4	\$272.2	\$0.0	\$0.0	\$0.0	\$0.0	. \$0.0	
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Full-time Equivalents (FTE)	4.0	3.1						
•			Dollar amount	s are shown ir	n thousands of	dollars.		
Other Resources	\$307.5	\$133.8	\$50.0	1	· · · · · · · · · · · · · · · · · · ·			
Comments:								
This project includes elements	of 191B.							

Actual authorization for FY97 was \$618.7, and the estimated projection for FY98 was \$234.6K. This budget requests that the FY97 budget be reduced in contractual obligations by \$37.6K and the FY98 budget be increased by the same amount to accommodate \$32.8K for temporary personnel for the fall surveys in October of 1998. This action is requested due to changes in contracting and hiring procedures at the Alaska Science Center, and the overlap of the field operations between the two fiscal years (I. e., August-October operations).

NOAA Contribution:

Habitat Investigation Program Manager, S. Rice, 1 mo = \$10.9K Principal Investigator, A. Wertheimer, 9 mo = \$66.2K Co-PI: Fishery Research Biologist, R. Heintz, 6mo = \$34.1K Little Port Walter Station Manager, F. Thrower, 1 mo = \$7.0K Additional operating costs of Little Port Walter Field Station = \$15.6K

For a total NOAA Contribution of \$133.8 K



Project Number: 98076 Project Title: Oil Effects on Pink Salmon Straying

Agency: National Oceanic & Atmospheric Administration



1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
J Thedinga	Co-PI: Fishery Research Biologist	12/3	10.0	5.5	1.3	56.3
R Heintz	Co-PI: Fishery Research Biologist	11/5	4.0	5.1	1.2	21.6
R Bradshaw	Fishery Research Biologist	9/5	6.0	4.2	1.2	26.4
J Maselko	Fishery Research Biologist	9/3	8.0	3.5	1.0	29.0
	Fisheries Technicians (11)	7/1	8.7	2.5	11.0	32.8
						0.0
	-				The second	0.0
						0.0
						0.0
						0.0
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······	L					0.0
	Subtotal		36.7	20.8	15.7	
		· · · · · · · · · · · · · · · · · · ·	r	Per	sonnel lotal	\$166.1
Travel Costs:		licket	Hound	lotal	Daily	Proposed
Description		Price	l rips	Days	Per Diem	<u>FFY 1998</u>
Anchorage lanuary Workshop	obordination mtag. 0	0.5			0.0	0.0
Missellenseus	coordination migs., 2	0.5	2	0	0.2	2.0
Miscellarieous						0.8
Inidentified scientific meeting: r	vresent paper 3					0.0
Condentined scientific meeting. F	nesent paper, o					4.0
Little Port Walter Field Station	4 staff, multiple trips		ļ			0.0
Beaver Charter	. a contra transmise at the a	1.0	7			7.0
Cessna Charter		0.6	8			4.8
Miscellaneou	s					2.0
				、 .		0.0
					1	0.0
					Travel Total	\$21.7

October 1, 1997 - September 30, 1998

1998	Project Number: 98076 Project Title: Oil Effects on Pink Salmon Straying Agency: National Oceanic & Atmospheric Administration	FORM 3B Personnel & Travel DETAIL
Prepared: 6/25/97		
1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

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October 1, 1997 - September 30, 1998

Contractual Costs:		Proposed
Description		FFY 1 998
NOAA Contract labor (incubation, egg/try survival determination)		10.0
3 x \$20,00/n x 300 h ea		18.0
1X \$18.00/n X 300 n ea		5.4
Contract X-ray Services for CWT nink salmon heads	· • - • •	56
Contract X-ray Cervices for OVV Print Salthor Heads	-	0.0
When a non-trustee organization is used, the form 4A is required. Contractual	Total	\$29.0
Commodities Costs:		Proposed
Description		FFY 1998
Misc. Expenses: October, November, April field operations		10.0
Groceries		6.0
Fuel		8.0
Film, report production costs		4.5
		`,
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Commodities	Total	\$28.5
	F	ORM 3B
	Co	ntractual &
Project Title: Oil Effects on Pink Salmon Straying	Co	mmodities
Agency: National Oceanic & Atmospheric Administration		DETAIL
Drepound	L'	
6/25/97		-

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1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

New Equipment Purchases:	Number	Unit	Proposed
Description	of Units	Price	FFY 1 998
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		5 mar	0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.	New Equ	lipment Total	\$0.0
Existing Equipment Usage:		Number	Inventory
Description	*, -	of Units	Agency
			NOAA
			NOAA
Video Camera		100	NOAA
Computers/NEC Manitars		100	NOAA
Palotte Recorder			NOAA
Face Softer/Counter			NOAA
		1 1	NOAA
			1
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			· .
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Project Number: 98076			
1998 Project Title: Oil Effects on Pink Salmon Straying		EC	luipment
Agency: National Oceanic & Atmospheric Administration			
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Prepared: 6/25/97		l	Aof
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Kevisea -1/23/97 approved TC 8-6-97

Administration, Public Information, and Science Management Project Number: 98100

Project Number: 98100 **Restoration Category:** Administration, Public Information and Scientific Management **Restoration Office Proposer:** Lead Trustee Agency: All Trustee Agencies Alaska SeaLife Center: n/a **Duration:** Ongoing Cost FY 96: \$3,439,600 Cost FY 97: \$2,940,500 Cost FY 98: \$2,796,300 Cost FY 99: \$2,500,000 Cost FY 00: TBD Cost FY 01: TBD Cost FY 02: TBD Geographic Area: n/a Injured Resource/Service: Multiple resources and services

Administration, Science Management and Public Information

ABSTRACT

1

Project 98100 provides overall support for administration and implementation of the restoration program through the Restoration Office. This includes funding support for the Trustee Council staff working at the direction of the Executive Director, management of the scientific peer review process, public involvement efforts including the active participation of the 17-member Public Advisory Group (PAG), and support for Trustee agency participation in the restoration program process as part of the Restoration Work Force.

Revised: 7/23/97

Administration, Public Information, and Science Management Project Number: 98100

INTRODUCTION

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The Trustee Council, established under the terms of a court approved civil settlement, is comprised of the Commissioner of the Department of Environmental Conservation, the Commissioner of the Department of Fish and Game; the Attorney General of the State of Alaska; the Secretary of the Department of the Interior; the Secretary of the Department of Agriculture; and the Director of the National Oceanic and Atmospheric Administration. In order to manage the Settlement as directed by the Trustee Council, the Administration, Public Information and Science Management project (98100) provides for overall implementation of the restoration program through the Restoration Office and the Trustee agencies.

Project 98100 supports administration, the scientific peer review process management, and public communications for the Trustee Council restoration program. This project makes extensive use of existing Trustee Council agency structures to keep administrative costs to a minimum. The proposed Project 98100 budget continues to make reductions in administrative and management costs as the overall work plan is reduced as directed by the Trustee Council. As proposed in FY 98, the budget of \$2,796,300 has been reduced \$144,200 below the FY 97 budget and is consistent with the projected target of \$2,800,000.

Components of the 98100 Administration, Public Information & Science Management project include:

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<u>Oil Spill Public Information Center</u> — The Oil Spill Information Center (OSPIC) currently serves as a central access point for information generated through the Trustee Council process and as a public repository for reports and other materials generated as a result of the cleanup, damage assessment and restoration efforts following the *Exxon Valdez* oil spill. Two staff librarians respond to inquiries from local, state, national, and international users, including but not limited to students (preschool to graduate level), educators, scientists, government agency personnel, state and federal legislators, conservationists, commercial and sport fishing interests, recreationists, spill area community residents, the business community, the media, the legal profession, and other libraries and information providers. OSPIC staff also maintains the Council's Internet homepage (http://www.oilspill.state.ak.us).

In FY 98, the OSPIC will be merged together with a coalition of libraries including federal, state, university and local government collections that will be combined as the Alaska Resources Library and Information Service (ARLIS). Two librarians from the Restoration office will join ARLIS with funding support from the Trustee Council for maintenance of oil spill and restoration program materials as part of the larger collection. A portion of the former OSPIC functions will be retained by the Restoration Office and absorbed by existing staff. The Administrative Record, formerly maintained by OSPIC, will be maintained by the Restoration Office staff. Also, the Microcomputer Technician position in OSPIC will be retained in the Restoration Office to administer the Local Area Network and continue work on the enhanced web page/database.

<u>Synthesis and Dissemination (Information Management)</u> — Initiated in FY 95, this component has further augmented the information management system and is scheduled to be closed out in FY 97.

This project has made oil spill restoration program information more readily available for use by resource managers, scientists, and the public in a user-friendly electronic format. This includes development of a database/geo-bibliography of Trustee Council reports and other information concerning restoration activities. This project has also been developing a web-based on-line interactive search capability for information on restoration projects (e.g., list of final reports that address a particular injured resource). This component will be concluded in FY 97 with further maintenance and refinement of the web site/database to be handled by the Microcomputer Technician position in the Restoration Office.

<u>Chief Scientist and Peer Review Process</u> — The Trustee Council and the Trustee Council-supported principal investigators need access to the best possible scientific knowledge and understanding concerning injured resources and services. This information has been provided continuously by the Chief Scientist and expert peer reviewers since the injury assessment process started in 1989. The Chief Scientist is independently contracted to assist the Executive Director and the Trustee Council. The Chief Scientist also uses a variety of other individuals with expertise in specific fields who provide their individual reviews of project proposals and assist in the peer review and approval of final reports.

Operations — The Operations component includes funding for the Executive Director and the Restoration Office staff that provide the basic program planning/implementation; intergovernmental and interagency coordination; public information; and overall program management functions of the Trustee Council. The Restoration Office staff works on behalf of all six Trustees collectively rather than for any one particular agency. In response to guidance from the PAG, the Operations budget includes funding for an enhanced public information effort including topical radio broadcasts on restoration projects. This component includes funding for an annual external audit, public meetings and workshops including the Annual Restoration Workshop; Trustee Council meetings and transcription services; travel expenses to support participation in various meetings; teleconferences; Public Notice advertising expenses; publication of the restoration program's Annual Report; preparation of annual work plan documents (i.e., annual Invitation, Draft Work Plan, final Work Plan); the Restoration Update newsletters; the Restoration Notebook series; other publications; and postage for mass mailings. The Operations component also provides funding to support and maintain the Trustee Council financial records including the preparation of monthly, quarterly and annual financial status reports. The Science Coordinator, who works in the Restoration Office and reports directly to the Executive Director, works closely with the Chief Scientist in facilitating the scientific review and evaluation process. This budget also includes funding for the lease and operating costs for offices in Anchorage (645 G Street) and a small Juneau office (in the Federal Office Building). Also included is funding to support planning in anticipation of the Exxon Valdez 10th anniversary in 1999.

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<u>Public Advisory Group</u> — The Public Advisory Group (PAG) consists of 17 members, plus two *ex-officio* members from the Alaska State Legislature. The membership of the PAG includes representatives of 12 major interest groups (e.g., tourism/recreation, commercial fishing, Native land owners) and five members from the public-at-large. The role of the PAG is to help provide meaningful public involvement including guidance and input to the Trustee Council on such items as the annual work plans, budgets, and overall implementation of the *Restoration Plan*. The Project 98100 budget reflects the administrative support expenses for the PAG, including travel expenses to participate in



various meetings. The FY 98 budget proposed for the PAG reflects a continuation-level of funding.

<u>Restoration Work Force</u> — The FY 98 budget for the Restoration Work Force reflects support for the six Trustee agency liaisons and travel funding for Trustee members to attend Council meetings. This funding will be used to support staff designated by the Trustees (liaisons) who assist in the development of the annual work plan, represent the Trustee Council members in matters related to implementation of the restoration program, and assist with management of projects.

NEED FOR THE PROJECT

The project will provide the essential management and administration necessary to efficiently implement the restoration program developed by the Trustee Council.

A. Statement of the Problem

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

B. Rationale/Link to Restoration

Project 98100 provides essential support to implement the restoration program as directed by the Trustee (Council and guided by the *Restoration Plan*.

C. Location

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

COMMUNITY INVOLVEMENT AND TRADITIONAL ECOLOGICAL KNOWLEDGE

Project 98100 supports various aspects of community involvement. This includes public information efforts to assist the general public and spill community residents to learn about and more effectively participate in the restoration program process. In addition to on-going public involvement efforts, the Restoration Office will initiate a series of public meetings in FY 98 to obtain public comment on future uses of the Restoration Reserve. This will include community meetings throughout the spill area.

PROJECT DESIGN

A. Objectives

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The fundamental objective of the Administration, Public Information and Science Management project is implementation and management of the Trustee Council direction to pursue a comprehensive, balanced approach to restoration.

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Specific objectives for FY 98 include:

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- 1. Implement the approved FY 98 Work Plan.
- 2. Provide access to local, state, national, and international users of restoration program information through the Alaska Resources Library and Information Service (ARLIS).
- 3. Continue to compile, manage, synthesize, and disseminate information about the Trustee Council results and findings from the restoration program, including: (1) publication of the *Annual Report*; (2) production of the *Restoration Update* newsletter six times per year; and publication of a "Restoration Notebook" series that profiles restoration program knowledge regarding specific injured resources (e.g., harbor seals).
- 4. Continue oversight and management of the Trustee Council science program, including the peer review and project evaluation process, under the direction of the Chief Scientist.
- 5. Sponsor the Annual Restoration Workshop in January 1998, bringing together scientists, agency staff, Trustee Council staff, academia, and members of the general public to review the status of the restoration program and to refine restoration strategies through the adaptive management process.
- 6. Further refine recovery objectives for injured resources as warranted on the basis of restoration project results and findings.
- 7. Complete habitat evaluations, appraisals and negotiations with willing sellers under both the Large Parcel and Small Parcel Habitat Protection Programs.
- 8. Conduct regular meetings and continue frequent interaction with the Public Advisory Group (PAG) as a means of gathering public input into the Trustee Council process.
- 9. Work closely with the Community Involvement Coordinator and Community Facilitators.
- 10. Continue planning for the 10th Anniversary Symposium (1999) and related events.
- 11. Develop the FY 99 Work Plan, including the initial *Invitation for Project Proposals* and a Draft Work Plan for public comment.
- 12. Continue oversight and management of on-going Work Plan restoration projects and expenditures, including the production of quarterly reports that track the status of Trustee Council authorized projects.
- 13. Complete a fourth independent audit.

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14. Continue to improve management/inventory of equipment purchased with Settlement funds.

B. Methods

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

C. Cooperating Agencies, Contracts and Other Agency Assistance

Multiple agencies are involved in the implementation of Project 98100. All Trustee agencies receive funding for liaison support. The Alaska Department of Fish and Game is the administering agency for most of the Operations functions, although the National Oceanic and Atmospheric Administration receives funding to pay for lease costs for the Juneau office. The Alaska Department of Natural Resources administers the contract for the Chief Scientist/peer review process. The U.S. Department of the Interior receives a small amount of funding for work in support of the Public Advisory Group as a well as funding for participation of a federal budget officer.

A variety of contracts will be administered under Project 98100, including the Chief Scientist/peer review contract. A number of small contracts will be administered under Project 98100 for services associated with equipment maintenance and publication of documents (see project detailed budget form for additional information).

SCHEDULE

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The Trustee Council operates on the federal fiscal year (October 1 - September 30).

A. Measurable Project Tasks for FY 98 (October 1, 1997 - September 30, 1998)

Measurable project tasks include holding the annual restoration workshop and successful development of the FY 99 Work Plan (including publication of the initial *Invitation*, followed by a *Draft Work Plan* for public comment and then a final Work Plan following Trustee Council action). Other measurable tasks include holding meetings of the Trustee Council and the Public Advisory Group, meetings of the Restoration Work Force, preparation of quarterly financial reports, quarterly project status reports, habitat program status reports, completion of a fourth independent audit, publication of the *Restoration Update* newsletter and the restoration program *Annual Report*.

B. Milestones and Endpoints

Implementation of Projects/Contracts/BAAs/RSAs: Annual Restoration Workshop: Publish annual *Invitation*: Receipt of FY 99 Project Proposals: Scientific/Technical/Policy/Legal Review of Proposals: Publish *Draft Work Plan*: October-September mid-January mid-February mid-April mid-April (through mid-August) mid-June

Trustee Council action on FY 99 Work Plan: Executive Director authorizations to proceed: mid-August mid-August (and thereafter)

C. Completion Date

Project 98100 will be complete at the end of federal fiscal year 1998.

PUBLICATIONS AND REPORTS

See above (Measurable Project Tasks).

PROFESSIONAL CONFERENCES

The Project 98100 budget reflects funding for Trustee Council staff to attend national conferences. This includes funding for the Science Coordinator to attend the annual meetings of the Pacific Seabird Group and the American Ornithological Union to meet with experts in seabird ecology and restoration as well as staff participation the annual meeting of the Society for Environmental Journalists to provide information concerning the restoration program and the upcoming 10th Year Anniversary Symposium in March of 1999.

NORMAL AGENCY MANAGEMENT

Funding for the Project 98100 budget supports the administrative, science management and public information functions that are required to implement the *Restoration Plan*. The Restoration Office and the functions included within the Project 98100 budget are budgeted for the sole purpose of supporting restoration program activities and may not be used for other agency purposes.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

At the direction of the Trustee Council, the Executive Director implements Project 98100 to provide overall coordination and integration of the restoration program. As part of an adaptive management process, the Trustee Council sponsors the annual restoration workshop that brings together scientists, federal and state resource agency staff, and members of the public to review the status of injured resources and services and refine restoration strategies. In addition, all project proposals are peer reviewed with regard to their coordination and integration aspects.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

The most significant changes between FY 97-Project 97100 and FY 98-Project 98100 concern continued reductions in funding in parallel with the overall work plan. The OSPIC budget has been reduced, reflecting the merger with ARLIS. Significant reductions have been made in contractual funding, but these savings have been in part offset by funding for new initiatives (e.g., funding for community meetings associated with the Restoration Reserve planning, effort to finalize NRDA reports that presently remain in draft form). FY 98 funding for the Restoration Work Force liaison functions has

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been maintained at a continuation level.

PROPOSED PRINCIPAL INVESTIGATOR

Not applicable to this project.

DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Revised / 30/97 approved TC 8-6-97

	Authorized	Proposed	F	ROPOSED F	FY 1998 TRUS	STEE AGENC	IES TOTALS	
Budget Category:	FFY 1997	FFY 1998	ADEC	 ADF&G 	ADNR	USFS	DOI	NOAA
			\$61.2	\$1,872:5	\$557.8	\$70.8	\$150.2	\$83.8
Personnel	\$1,289.5	\$1,338.9						e Angli tagan sa
Travel	\$171.3	\$177.5						
Contractual	\$1,170.0	\$993.2						
Commodities	\$38.3	\$27.0	en g Se san ta ta ta ta ta ta Mana San ta	n an	n an	and the second		a 19 performa forst sing and and an anno an
Equipment	\$19.0	\$10.0		LONG R	ANGE FUNDI	NG REQUIRE	MENTS	
Subtotal	\$2,688.1	\$2,546.6	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$252.4	\$249.7	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	-
Project Total	\$2,940.5	\$2,796.3	\$2,500.0	TBD	TBD	TBD	TBD	
		·.				~~ '		and a second
Full-time Equivalents (FTE)	17.6	17.4	• • • • •				or or the tark a metric	n n nga sél na mba na shapan sagiga na shika
· · ·			Dollar amount	s are shown ir	n thousands of	dollars.		
Other Resources								
Comments.					·			
	· ·					·· ·		
				· ·	•			رما • • • •
						· · · · · · · · · · · · · · · · · · ·		·
			•					
1998	Project Nur Project Title Manageme Agency: M	nber: 9810 e: Administr nt ultiple	0 ation, Public	: Informatior	n and Scient	ific	FOF MULTI- AGI SUM	RM 2A TRUSTEE ENCY IMARY
70	••••••••••••••••••••••••••••••••••••••		DRAF	-T		•	•	Printed: 7/3

Printed: 7/30/97

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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

	Authorized	Proposed	F	ROPOSED F	FY 1998 TRU	STEE AGENC	IES TOTALS	
Budget Category:	FFY 1997	FFY 1998	ADEC	- ADF&G	ADNR	USFS	, DOI	NOAA
			\$0.0	\$146.3	\$0.0	\$0.0	\$51.4	\$0.0
Personnel	\$169.2	\$127.2						• · · · ·
Travel	\$0.0	\$0.0	· ·					-
Contractual	\$101.6	\$48.0						
Commodities	\$10.0	\$0.0	today the of some the same and the set	والمراجع والمتعادية والمراجع	ะระนามพาสะกัจการสำนาว		مى يەرىپىيە ھەرھە ھەرەپ	مرجع بالمارسين معير الين الكور
Equipment	\$4.0	\$0.0		LONG R	ANGE FUNDI	NG REQUIRE	MENTS	
Subtotal	\$284.8	\$175.2	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$32.5	\$22.5	[°] FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$317.3	\$197.7	\$196.3	\$115.0	\$115.0			
						1		
Full-time Equivalents (FTE)	3.0	2.0						° Latin an
			Dollar amount	s are shown ir	h thousands of	dollars.		
Other Resources				•				

October 1, 1997 - September 30, 1998

Comments:

FY 98 OSPIC budget reflects cost savings resulting from merger with the Alaska Resources Library and Information Service (ARLIS). In FFY 98, two librarian positions will be stationed at ARLIS. The Microcomputer Technition position will remain at the Restoration Office (645 G Street) and consoidated within the ADF&G Operations component to support the Local Area Network and the information management/Internet web server. The Restoration Office will also fund those partial costs of ARLIS operations associated with continued support of restoration program mission including \$24.0 for lease payment/rent and \$24.0 to offset costs for telecommunications, subscriptions, acquisitions, equipment maintenance, office supplies, etc. at a level substantially below FFY 97.

1998

Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - OSPIC Merger with ARLIS Agency: Multiple

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SUMMARY

DRAFT FFY 98 EXXON VALDEZ TRootEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Budget Category:	Authorized FFY 1997	Proposed FFY 1998						
Budget Gutegory.								
Personnel	\$169.2	\$127.2						
Travel	\$0.0	\$0.0				, * , *		
Contractual	\$101.6	\$0.0						e de la companya de l La companya de la comp
Commodities	\$10.0	\$0.0						
Equipment	\$4.0	\$0.0		LONG RA	NGE FUNDIN	IG REQUIREM	MENTS	
Subtotal	\$284.8	\$127.2	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$32.5	\$19.1	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$317.3	\$146.3	\$144.9	\$63.6	\$63.6			
-								
Full-time Equivalents (FTE)	3.0	2.0	al 1997 - Sana Angela Maria angela Mangela 1997 - Maria Angela Maria ang Pangela Mangela Mangela Mangela Mangela Mangela Mangela Mangela Mangela Mangela M		an and an end and a sum	ดแก่งหนึ่งสินครารสุดกระการและสาการ ค.	e	Sang San
			Dollar amount	s are shown ir	n thousands of	dollars.		
Other Resources								
Comments:	· .							
	Destant Marin		0] –	FORMAN
1998	Project Nur Project Title Manageme Agency: Al	nber: 9810 e: Administr nt - OSPIC K Dept. of F	ation, Public merger with Fish and Gar	Information ARLIS ne	n and Scien	tific		FORM 3A TRUSTEE AGENCY SUMMARY

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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	- Step	Budgeted	Costs	Overtime	FFY 1998
· · ·		×	_			0.0
Holba	Librarian III		12.0	5.9		70.8
Ballard	Librarian II		12.0	4.7		56.4
						0.0
						0.0
						0.0
						0.0
	·					0.0
						0.0
						0.0
		,				0.0
· · · ·	Subtotal		24.0	10.6	0.0	0.0
	Gubiotai	, 	27.0	Pei	sonnel Total	\$127.2
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description	nya ang ang ang ang ang ang ang ang ang an	Price	Trips	Days	Per Diem	FFY 1998
L <u> </u>					Travel Total	<u>۵.0</u>
1998	Project Number: 98100 Project Title: Administration, Public Management - OSPIC merger with Agency: AK Dept. of Fish and Ga	c Information ARLIS me	n and Scient	iific		FORM 3B Personnel & Travel DETAIL

October 1, 1997 - September 30, 1998

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DRAFT FFY 98 EXXON VALDEZ TRosTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Contractual Costs:			Proposed
Description	۰. ۲		FFY 1998
Building Lease (contribution to AF	RLIS)		0.0
Telephone	а С. С. С		0.0
Equipment Maintenance and repa	air (copier, postage meter/scale, reader/printer, fax)		0.0
Postage			0.0
Western Library Network			0.0
LaserCat			0.0
Dialog Database	•		0.0
Subscriptions, acquisitions, other	expenses (contribution to ARLIS)		0.0
Document Reproduction (includin	g copyright fees)		0.0
Freight and cartage of materials			0.0
Training			0.0
One time moving costs associated	d with Coalition Library merger relocation		0.0
When a non-trustee organization	is used, the form 4A is required.	Contractual Total	\$0.0
Commodities Costs:			Proposed
Description			FFY 1998
Office and postal supplies		4	0.0
Data Processing Supplies			0.0
Library Acquisitions			0.0
			, đ
			-
		Commedities Total	<u>eo o</u>
		Commodities Total	<u> </u>
[]	Draiast Number, 08100		ORM 3B
1998	Project Litle: Administration, Public Information and Scientific		ntractual &
	Management - OSPIC merger with ARLIS		mmodities
	Agency: AK Dept. of Fish and Game		DETAIL

New Equipment Purchases	:	Number of Linite	Unit	Propose FFY 19
	· · · · · · · · · · · · · · · · · · ·			
Web server equipment				0
		ļ		
	-			
	· · · · ·			
I nose purchases associated	with replacement equipment should be indicated by placement of an R.		Ipment I otal	\$1
Existing Equipment Usage		· · · · ·	of Unite	
		· · ·	01 01113	Aye
				;
				:
	Project Number: 98100			
	Project Title: Administration, Public Information and Scient	ific		
4000				Juihillei
1998	Management OSDIC margar with ADLIS			
1998	Management - OSPIC merger with ARLIS		[DETAIL
1998	Management - OSPIC merger with ARLIS Agency: AK Dept. of Fish and Game			DETAIL
1998	Management - OSPIC merger with ARLIS Agency: AK Dept. of Fish and Game			

	Authorized	Proposed						
Budget Category:	FFY 1997	.FFY 1998						
		-				· · · ·		
Personnel		\$0.0			n n n n n n Ski Ski Ski Ski Ski Ski Ski Ski Ski Ski			
Travel		\$0.0						
Contractual		\$48.0						
Commodities		\$0.0	and the state of a second	, the R ¹¹ production of the second second	en anteres en la responsa en la	e - 1 pour l'agertar, generative (§ - 1 pourber de	a - bege - se ataing gan is ang is dasharar at	- 12- a buraarise braitua a afaar
Equipment		\$0.0		LONG RA	ANGE FUNDIN	NG REQUIREN	MENTS	
Subtotal		\$48.0	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration		\$3.4	FFY 1999	FFY 2000	FFY.2001	FFY 2002	FFY 2003	
Project Total		\$51.4	\$51.4	\$51.4	\$51.4			
			· · · · · · · · · · · · · · · · · · ·	a ca granningos a p				n ya an na an
Full-time Equivalents (FTE)		0.0	an a cakaya ta a sa		in Skiederski vielik v eri	ு பாலியாட மாற்றை தல்தான் குறைகளாக ந	an eine das ei San a' San a' anna a' André Annais an agus	te st mittig tilst and a thing and the second star in
			Dollar amount	s are shown i	n thousands o	f dollars.		
Other Resources						1	<u> </u>	
Comments:								
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	r						1	
	Project Nur	mber: 9810	0					FORM 3A
	Project Title	a: Administr	- ation Dublic	Informatio	n and Solan	tific	-	
1998	Manager				n anu ouen	uno		INUSIEE
	Ivianageme	ent - USPIC	merger with	AKLIS				AGENCY
	Agency: D	ept. of the li	nterior				. 5	SUMMARY
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Personnel Costs:	· · · · · ·	GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
						0.0
						0.0
						0.0
						0.0
		<i>'</i>				0.0
						0.0
						0.0
						0.0
	• .					0.0
						0.0
						0.0
						0.0
\			0.0	U.U	U.U	\$0.0
Troval Costa		Tieket	Bound	Total	Doily	Proposed
Description		Price	Tripe		Daily Per Diam	FT000500
	•	11100		Days	- rer Diem	1111000
				•		
					1	
· ·						:
L				•	Travel Total	<u>\$0.0</u>
r 1		•	<u> </u>			
	Project Number: 98100					-ORM 3B
1998	Project Title: Administration, Public	: Informatior	n and Scient	ific [·]		Personnel
1330	Management - OSPIC merger with	ARLIS				& Travel
	Agency: Dept. of the Interior					DETAIL
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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Contractual Cos	ts:		Proposed
Description			FFY 1998
Building Lease (co	ontribution to ARLIS)		24.0
Telephone			0.0
Equipment Mainte	enance and repair (copier, postage meter/scale, reader/printer, fax)		0.0
Postage			0.0
Western Library N	letwork		0.0
LaserCat	·		0.0
Dialog Database	ruisitions, other evenence (contribution to ADUR)		24.0
Document Penro	Justion (including converget food)		24.0
Ereight and carta	re of materials		0.0
Training			0.0
One time moving	costs associated with Coalition Library merger relocation		0.0
When a non-trust	ee organization is used, the form 4A is required.	Contractual Total	\$48.0
Commodities Co	usts:		Proposed
Description		,	FFY 1998
		÷.	
l		·•	
1	C	mmodities Total	\$0.0
	Project Number: 98100	F	ORM 3B
4000	Project Title: Administration, Public Information and Scientific	Co	ntractual &
1998	Menorement OODIO merse with ADLIO		mmodities
	Ivianagement - USPIC merger with ARLIS		
	Agency: Dept. of the Interior		DETAIL

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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

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October 1, 1997 - September 30, 1998

		Number	Unit	Propose
Description	·	of Units	Price	FFY 199
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		Nove Corre	Inner A Tetal	
nose purchases associated with	In replacement equipment should be indicated by placement of an R.		ipment i otal	ېر استونو
Existing Equipment Usage:			Number	Invent
Jescription			or Units	Agei
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				· · · · · · · · · · · · · · · · · · ·
	Project Number: 98100		F	ORM 3E
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient	ific	F	ORM 3E
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient Management - OSPIC merger with ARLIS	ific	F	ORM 3E quipmen DETAIL
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient Management - OSPIC merger with ARLIS Agency: Dept. of the Interior	ific	F	ORM 3E quipmen DETAIL
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient Management - OSPIC merger with ARLIS Agency: Dept. of the Interior	ific	F	ORM 3B quipmen DETAIL
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient Management - OSPIC merger with ARLIS Agency: Dept. of the Interior	ific	FE	ORM 3B quipmen DETAIL

DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

	Authorized	Proposed						الماري مي دفان و محموم از الهرد المراجع الماري مي الماري المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع المراجع
Budget Category:	FFY 1997	FFY 1998	4				· • • •	
			51 8					
Personnel	\$6.0	\$0.0						
Travel	\$0.0	\$0.0						
Contractual	\$48.0	\$0.0						
Commodities	\$1.3	\$0.0			jera i stara	· · · · · · · · · · · · · · ·	Ann 10 An 1	a da antina antina da antina d
Equipment	\$0.0	\$0.0		LONG RA	ANGE FUNDI	NG REQUIREN	MENTS	
Subtotal	\$55.3	\$0.0	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$4.3	\$0.0	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$59.6	· \$0 . 0						
				i ya zanatening gantening i	n men ning segi pengan semegan se	ana tu aya gantagan kina kitu tana tu tu tu tu		
Full-time Equivalents (FTE)	0.2	0.0	former and the second			un un anti-	3. 1.1. # < A.#206 3)P.#6619.00.203	a manakanga siturgani na mene
			Dollar amount	s are shown i	n thousands o	f dollars.		
Other Resources					<u> </u>]		
Comments: FY 98 budget reflects conclusio	n of this projec	t in FY 97.						
1998	Project Nun Project Title Managemen Managemen Agency: Ał	nber: 9810 e: Administra nt - Synthes nt) < Dept. of N	0 ation, Public sis and Disse latural Reso	Information emination (I urces	n and Scien	tific		FORM 3A TRUSTEE AGENCY SUMMARY

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Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	- Step	Budgeted	Costs	Overtime	FFY 1998
······	Subtotal	ad the called and the	0.0	0.0	0.0	Strand Strange Strand
		a an		Per	sonnel Total	\$0.0
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FFY 1998
					TrauchTotal	
L					Travel Total	\$0.0
1998	Project Number: 98100 Project Title: Administration, Public Management - Synthesis and Disse Management) Agency: AK Dept. of Natural Reso	Information emination (Ir urces	and Scienti nformation	fic	F	FORM 3B Personnel & Travel DETAIL



DRAFT FFY 98 EXXON VALDEZ TRiver EE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Contractual Costs:	Proposed
Description	FFY 1998
Production costs for update of CD-Rom, 200 copies Database management support, update of geobibliography, integration with GIS Software licensing agreements Hardware maintenance agreement Equipment repairs Telecommunications Training	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
When a non-trustee organization is used, the form 4A is required. Contract	ctual Total \$0.0
Commodities Costs:	Proposed
Description	FFY 1998
Supplies including plotter paper, data cartridges, recordable CDs Software upgrades	0.0 0.0
Commodi	ities Total \$0.0
1998 Ightar 1998 Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar Ightar	FORM 3B Contractual & Commodities DETAIL

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New Equipment	Purchases:	Number	Unit	Proposed
Description		of Units	Price	FFY 1998
	-			
Those purchases	associated with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
Existing Equipm	ent Usage:		Number	Inventory
Description	,		of Units	Agency
1998	Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Synthesis and Dissemination (Information Management)		F	FORM 3B Equipment DETAIL
	Agency: AK Dept. of Natural Resources			· ·
	DDACT			

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DRAFT FFY 98 EXXON VALDEZ TROSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

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	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998	3	4				
Personnel	\$0.0·	\$0.0					المعالي المعين الم	
Travel	\$0.0	\$0.0						
Contractual	\$380.0	\$380.0	4					
Commodities	\$0.0	\$0.0	ж., ч. – –			1		နေသည်။ နေကာင် ကြောင်းနိုင်ငံ ကြောင်းကြောင်းကြောင့် ကြောင်းနေနေသည်။
Equipment	\$0.0	\$0.0		LONG RA	ANGE FUNDIN	IG REQUIREN	MENTS	
Subtotal	\$380.0	\$380.0	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$20.1	\$20.1	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$400.1	\$400.1					•	
				umenningsberigtet på i sam en	night Gaussing, ing, fright i namhain in		and an an an and a second s	
Full-time Equivalents (FTE)	0.0	0.0	ச 1955 பிழ்த்தத்தாக்கும் காற்காக்காக்காக்காக்காக்காக்காக்காக்காக்	un to compose o destadorementes d'ar con arco	s Salahatatanala, s, s, s, at, at, anayeers	- 19 19. 44 da - 1 1 1 1 1 1 1 1	าสาวรา นูลา สรรุ 1 สมเว็บไฟเป็นได้ได้เป็นได้เรื	s bei min mandation tak en Sa man
			Dollar amount	s are shown i	n thousands of	f dollars.		
Other Resources	11		l	l		L	L	l
Comments:								
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And a second	1						Manual 1997 - 1997 - 19	
	Project Num	ber: 9810	ר				[FORM 3A
	Droject Title	· Administra	- otion Dublic	Information	and Palant	itia		
1998	in loject fille				i anu Scient	.mc		RUSIEE
· · ·	livianagemei	nt - Chief So	cientist and	Peer Review	wers			AGENCY
L	Agency: Al	CDept. of N	atural Reso	urces			9	SUMMARY
				<u></u>			h	
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Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
		•				
]
	Subtotal		0.0	0.0	0.0	\$0.0
Travel Costs:	2001 - Kanada Print Palance, f. An Alanan - Adam Calance - Company - 200 - 1000	Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Davs	Per Diem	FFY 1998
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			·	L	Traval Tatal	L 60.0
						<u>ال</u> 40.0
	Decide t Number 08400	4 - 4 ⁺	• • ~	م r	· -	
	Project Number: 98100	1. C		a		
1998	Project Litle: Administration, Public		n and Scient	LITIC		Personnei
	Management - Chief Scientist and	Peer Revie	wers	· · · · ·		& Iravel
	Agency: AK Dept. of Natural Reso	burces	,	۰ ۲	÷	DETAIL
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DRAFT FFY 98 EXXON VALDEZ TRACE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Contractual Costs:			Proposed
Description			FFY 1998
Contract to provide scientific A contract is currently in pla monthly, throughout the enti	c support to the Trustee Council, including the services of the Chief Scientist and for Pe ce with annual options for renewal. The contractor is paid monthly based upon services re fiscal year.	er Reviews. s rendered	380.0
	-		
Moon o non trusto o organiz	ation is used the form (A) is required	anterestivel Total	¢280.0
Commendition Ocetor	ation is used, the form 4A is required.	ontractual Iotal	\$300.0
Commodifies Costs:			Proposed
Description			FF1 1990
		r.	
			1
			, 1
		· · ·	
	Con	nmodities Total	\$0.0
r]	
	Project Number: 98100		URM 3B
1998	Project Title: Administration, Public Information and Scientific	Cor	ntractual &
	Management - Chief Scientist and Peer Reviewers	Сог	mmodities
	Agency: AK Dept. of Natural Resources		DETAIL
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New Equipment Purc	chases:	Number	Unit	Propose
Description		of Units	Price	FFY 19
hose purchases asso	ociated with replacement equipment should be indicated by placement of an R.	New Equ	lipment Total	\$(
xisting Equipment (Usage:		Number	Invent
escription			of Units	Ager
				ļ
	· · · ·			
				-
		•		1
		1		
	Project Number: 98100		l F	FORM 3E
1002	Project Title: Administration, Public Information and Scientif	ic I	F	auinmen
1990	Management - Chief Scientist and Peer Reviewers			
	Agency: AK Dent of Natural Resources			
			L	
	DDAET			
6 (4) 3 (4)				Printed:
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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

	Authorized	Proposed	F	ROPOSED F	FY 1998 TRU	STEE AGENC	IES TOTALS	
Budget Category:	FFY 1997	FFY 1998	ADEC	· ADF&G	ADNR	USFS	DOI	NOAA
			\$0.0	\$1,553.4	\$103.5		\$40.0	\$17.1
Personnel	\$800.4	\$890.4	an i			na na an ing an ing An ing ang ang ang ang ang ang ang ang ang a		
Travel	\$81.3	\$79.1						
Contractual	\$624.7	\$558.1						
Commodities	\$18.0	\$18.0	and the second	and we we we we as a set of the s	ar na afamilina - Shi n Sir a - Shaall ar Siri	na second a		
Equipment	\$15.0	\$10.0		LONG R	ANGE FUNDI	NG REQUIRE	MENTS	
Subtotal	\$1,539.4	\$1,555.6	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$147.2	\$158.4	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$1,686.6	\$1,714.0						
			مېت د د د د د د د د رو اور اومې ≯ د د د د د د د د د د د د م د د د د د د د	na na shekara ngasan ana '''''''''''''''''''''''''''''''''	en e e a marte de serve e marte de la marte de serve	energi mentri en na nam em	ana ang pang ang pang ang pang ang pang p	
Full-time Equivalents (FTE)	10.3	11.3	ta 1. Martin - Martin Martin - Martin	and the second se			Market an east spectra warmaning the	as inter the second in the second second
			Dollar amount	s are shown ir	h thousands of	dollars.		
Other Resources						~		
Comments: FY 98 personal services budget No increase in overall staffing ir position from OSPIC componer Information Service (ARLIS).	t reflects increa n FY 98. Appa it to Operations	ased state hea rent 1 FTE inc s as part of co	alth care costs prease in Opera nsolidation foll	and other emp ations results f owing merger	oloyee cost inc from the transf of OSPIC with	reases as adn er of existing I the Alaska Re	ninistered thro Microcomputer esources Libra	ugh ADF&G. Technician Iny and
1998	Project Nur Project Title Manageme Agency: Mu	nber: 9810 e: Administr nt - Operati ultiple	0 ation, Public onš	Informatior	n and Scient	lific	SUM	1MARY

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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

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October 1, 1997 - September 30, 1998

	1	FFY 1998		-		,		
				1911 (M. 191				いたなど
Personnel	\$681.6	\$765.6						
Travel	\$81.3	\$79.1						
Contractual	\$588.7	\$542.1						
Commodities	\$18.0	\$18.0			a successful and the second second second second second	a deservice means and an ar	tan anala kapitan di Lana da kapitan di	en the priminent wine entrone we
Equipment	\$15.0	\$10.0		LONG R/	ANGE FUNDIN	IG REQUIREN	MENTS	
Subtotal	\$1,384.6	\$1,414.8	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$126.9	\$138.6	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$1,511.5	\$1,553.4				AND THE REAL PROPERTY		No. of the second of the Sole
Full-time Equivalents (FTE)	9.0	10.0						
			Dollar amoun	s are shown i	n thousands of	i dollars.		a kanan diri bada pingir bidawa baba baba dira pikik
Other Resources								<u> </u>
Administrative Assistant I (K H as was the case in FY 97 (44.	lile) position in th 4).	e Anchorage	Restoration O	ffic e to be sup	ported through	n ADF&G Ger	eral Administr	ation funds
Administrative Assistant I (K H as was the case in FY 97 (44.	lile) position in th 4).	e Anchorage	Restoration O	ffice to be sup	ported through	ADF&G Ger	eral Administr	ration funds
Administrative Assistant I (K H as was the case in FY 97 (44. 1998	lile) position in th 4) Project Nun Project Title Manageme Agency: Al	e Anchorage nber: 9810 e: Administr nt - Operati K. Dept. of I	Restoration O 0 ation, Public ons Fish and Ga	ffice to be sup	n and Scien	hADF&G Gen	eral Administr	FORM 34

DRAFT FFY 98 EXXON VALDEZ TROSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	- Step	Budgeted	Costs	Overtime	FFY 1998
McCammon .	Executive Director		12.0	10.5		126.0
Cramer	Director of Administration		12.0	8.7		104.4
Senner	Science Coordinator		12.0	8.5		102.0
Myers	Director of Operations		12.0	8.6		103.2
Schubert	Project Coordinator		12.0	7.3		87.6
Hunt	Communciations Coordinator		12.0	5.8		69.6
Williams	Executive Secretary		12.0	5.5		66. 0
Yockey	Administrative Assistant II		12.0	4.3		51.6
Lawrence	Microcomputer Technician II		12.0	4.1		49.2
Hile	Administrative Assistant I *		12.0	3.7		
Unanticipated overtime			•		6.0	6.0
* Note: Position supporte	d with GA funds. Subtotal		120.0	67.0	6.0	References and
		• •		Per	sonnel Total	\$765.6
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FFY 1998
In-State Travel						
Anchorage to Junea	u (3 staff/1 transcriber for 3 TC meetings)	0.4	- 12	36	0.2	12.0
Anchorage to Junea	u (administrative travel)	0.4	14	45	0.2	14.6
Anchorage to PWS	Community (3 staff/1 transcriber for TC meeting)	0.2	4	12	0.2	3.2
Community Meeting	s/Restoration Reserve Planning Meetings	0.5	32	32	0.2	22.4
PAG Field Trip (rest	oration office staff participation)	0.3	4	16	0.2	4.4
Other community inv	volvement/public meetings	0.2	3	6	0.2	1.8
Car rental (daily rate	of \$40.00)			- 14		0.6
						.1
						, 1
Out-of-State Travel						-
Anchorage - Washin	gton D.C.	1.4	6	15	0.2	11.4
Professional confere	ences (including SEJ, PSG, AOU)		5	20	0.2	8.0
Car Rental (daily rate	e of \$40.00)			20		0.7
		•				
		······································			Travel Total	\$79.1
[]	Project Number: 08100					
	Broiget Titles Administration Dublis 1	-f		_	FC	
1998	Froject Little: Administration, Public I	mormation a	ina Scientifi	C I	Pe	ersonnel
	Management - Operations				8	Travel
	Agency: AK. Dept. of Fish and Gam	ne				DETAIL
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Printed: 7/30/97

Contractual Costs:	Proposed
Description	FFY 1998
Video project	30.0
1998 Audit Engagement	60.0
Phone and fax	33.0
Postage (metered mail 10.0, bulk mail 7.0)	17.0
Courier service	4.2
Building Lease/Parking (645 G Street)	93.9
Off-site storage space (@ \$120/month)	1.4
Annual Restoration Status Report	21.0
Newsletter (6 issues at \$1700 each)	10.2
Annual Invitation	5.0
Final Work Plan	1.8
Draft Work Plan	8.0
Restoration Notebook Series	4.8
Restoration Reserve Planning (printed material/tabloid 8.3, financial/investment consultant 15.0)	23.3
Equipment Maintenance Agreements (copiers, fax machines, postage meter in Anchorage and Juneau)	19.0
Local Area Network/Web Server support contract (out source)	20.0
Public Notice (TC meetings 7.6, annual Invitation 2, annual restoration workshop 1.5)	12.1
ADA Compliance (special access to meetings)	2.5
Transcription Services	9.0
Teleconferencing	8.0
Staff training	4.5
Aircraft Charters within the Spill Area	10.0
Annual Restoration Workshop	18.0
Other technical review sessions/workshops	4.0
Micellaneous unanticipated printing	3.0
Meeting space rental (out of building)	4.0
56KB Line /DIS-WAN Access (12 months)	. 2.5
Topical radio broadcasts/news column contract	60.0
Community based restoration exhibits (freight/transportation, brochures, exhibit fees)	6.9
10th Anniversary Scientific Symposium Planning (SeaGrant consulting, steering committee meeting costs)	10.0
NRDA reports - bringing draft reports to final form	35.0
When a non-trustee organization is used, the form 4A is required. Contractual Tota	I \$542.1

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DRAFT FFY 98 EXXON VALDEZ TRADITEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Commodities Costs:		Proposed
Description		FFY 1998
Office Supplies Local Area Network Softwar Data Processing Supplies	e and Upgrades	11.0 5.0 2.0
· · · ·		
	Commodities Total	\$18.0
1998	Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Operations Agency: AK. Dept. of Fish and Game	FORM 3B ontractual & ommodities DETAIL

lew Equipment Purch	ases:	Number	Unit	Propose
Description		of Units	Price	FFY 195
Local Area Network	and web server replacement and repair	5	2.0	10
	: .			
nose purchases assoc	lated with replacement equipment should be indicated by placement	nt of an R. New Equ	lipment lotai	\$10
existing Equipment Usage:				
				•
			<u> </u>	
1998	Project Number: 98100 Project Title: Administration, Public Information Management - Operations Agency: AK. Dept. of Fish and Game	and Scientific	E	FORM 3E Equipmen DETAIL
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	Authorized	Proposed				4		
Budget Category:	FFY 1997	FFY 1998						
								12
Personnel	\$84.0	\$90.0						
Travel	\$0.0	\$0.0						
Contractual	\$20.0	\$0.0						
Commodities	\$0.0	\$0.0	n an an an an an an an an an	المعادية والمعالمة المعالمة ا	a tale o partici	and the second	and the second	and the second
Equipment	\$0.0	\$0.0		LONG RA	NGE FUNDIN	IG REQUIRE	MENTS	
Subtotal	\$104.0	\$90.0	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$14.0	\$13.5	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$118.0	\$103.5						
			and a set of the set o			이가 이 전 전 이 가지 있는 것 		
Full-time Equivalents (FTE)	1.0	1.0	 7. Азарти Алтана Волганика, Ф.А., ал. Ахар соно 		a second care and a second		egen 🖉 A suur (services) is constant of	
			Dollar amount	s are shown i	n thousands of	f dollars.		
Other Resources		l	I	<u> </u>		l		
· · ·								
1009	Project Nur Project Title	nber: 9810 e: Administr	0 ation, Public	: Information	n and Scien	tific		FORM 3A TRUSTEE

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Stép	Budgeted	Costs	Overtime	FFY 1998
				b		0.0
Christman	Natural Resources Manager II		12.0	7.5		90.0
	`·					0.0
						0.0
						0.0
	-					0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtot	al	12.0	7.5	0.0	i destrict
		<u></u>		. Pei	sonnel Total	\$90.0
Fravel Costs:		Ticket	Round	Total	Daily	Proposed
Description	• •	Price	Trips	Days	Per Diem	FFY 1998
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				х.		
	·	. `	l		Trevel Tetel	0.0
					Iravel Iotal	\$0.0
		,	· · · · · · · · · · · · · · · · · · ·	;		
	Project Number: 98100				F	ORM 3B
1998	Project Litle: Administration, Pub	lic Information	n and Scient	lific .	F F	Personnel
1000	Management - Operations					& Travel
	Agency: AK Dept. of Natural Res	sources				DETAIL
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	Dh	<u>}</u>				Printed

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Contractual Costs:			Proposed
Description			FFY 1998
Description			
Mfor a pop tructor organizati	on is used the form 1A is required	Contractual Total	\$0.0
Commodition Contai	on is used, the form 4A is required.	Comfactual Total	proposed
Description	······································		FEY 1998
		Commodities Total	\$0.0
			<u> </u>
1998	Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Operations Agency: AK Dept. of Natural Resources	F Co Co	ORM 3B ntractual & mmodities DETAIL
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New Equipment Purchases:	Number	Unit	Proposed
Description	• of Units	Price	FFY 1998
Those purchases associated with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
Existing Equipment Usage:		Number	Inventory
Description	•	of Units	Agency
1998 Project Number: 98100 Project Title: Administration, Public Information and Scient Management - Operations Agency: AK Dept. of Natural Resources	ific	F	ORM 3B quipment DETAIL
	.`		Printer 3

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October 1, 1997 - September 30, 1998

	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
Descentel			4					
Personnel	\$34.8	\$34.8						
	\$0.0	\$0.0						
Commodition	\$0.0	<u> </u>						
Commodules	\$0.0	\$0.0	สีของรัฐเม็นการที่สินชีวิต (ค.ศ. 1976) สาของรัฐเม็นการที่สินชีวิต (ค.ศ. 1976)				ATTAINO	2011 Carlos de Militaria a contra de la Carlos de C
	\$0.0	\$0.0	E allowed and	LUNGRA	ANGE FUNDIN		IEN15	
	\$34.8	\$34.8	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$5.2	\$5.2	FFT 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project I otal	\$40.0	\$40.0	sei in and - anderities, an automatic of a device of	ennemissi Maler - Prise (g. P. Prise), Henry Performante	allahar aliyo in Kalone Analoshi - ari e e aniyo yaham	anto sy shenisising matanetic a shift, ng t	ing 1700 manging toggin a majang king t	e yr y'r Carwer an Rug Yr Hegela ge's rheg mar
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Full-time Equivalents (FIE)	0.3	0.3	analigii aya dali ya ni ya ya taya	т 538 иг в Бастар цанал, обърд. 194 ж. и отбал, -	- Farge apply and the strage of hange provident	าย สู่สังษัณ คุณที่เลี้ยร วิธีสาวยุเสีย คุณหาวยาวสุดเสีย สุข	مريديد مريد مريد مريد مريد مريد مريد	ur sozahungtan danjsi pranako staroj razi
			Dollar amount	s are shown in	n thousands of	f dollars.	Y	·····
Other Resources					L			
Comments:								
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1	Project Nur	nber: 9810	U					FURIVI JA
1998	Project Title	e: Administr	ation, Public	: Informatio	n and Scien	tific		TRUSTEE
	Manageme	nt - Operati	ons					AGENCY
	Agency: De	ept. of the l	nterior					SUMMARY
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Personnel Costs:		GS/Range/	Months	Monthly		Propose
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 199
Baldauf	Federal Budget Officer		4.0	8.7		34.8
				· ·		
		:			1	
		Subtotal	4.0]	8.7 Per	sonnel Total	\$34.
Travel Costs:	 	Ticket	Round	Total	Daily	Propos
Description	· · · · · · · · · · · · · · · · · · ·	Price	Trips	Days	Per Diem	FFY 19
	•					
				• •		
	· · ·					
		· · · · · · · · · · · · · · · · · · ·			Travel Total	\$0.
			······································			· · · · · · · · · · · · · · · · · · ·
	Project Number: 98100	Dublic Information	and Calant	fie	F	ORM 3B
1998	Management - Operations		anu scient			ersonnel & Travel
	Agency: Dept. of the Interio	r				DETAIL
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Contractual Costs:	Proposed
Description	FFY 1998
When a non-trustee organization is used, the form 4A is required.	\$0.0
Commodities Costs:	Proposed
Description	FFY 1998
	.: .:
Commodities Total	\$0.0
1998 Project Number: 98100 Fe Corr Project Title: Administration, Public Information and Scientific Corr Management - Operations Corr Corr Agency: Dept. of the Interior Image: Dept. of the Interior Image: Dept. of the Interior	ORM 3B htractual & mmodities DETAIL

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Those purchases ass	ociated with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.
Existing Equipment	Usage:		Number	Invento
Description		,	of Units	Agen
1998	Project Number: 98100 Project Title: Administration, Public Information and Scien Management - Operations Agency: Dept. of the Interior	tific	F	FORM 3B quipment DETAIL

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October 1, 1997 - September 30, 1998

	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998.						
Demonal								
	\$0.0	\$0.0						
	\$0.0	\$0.0						
Contractual	\$10.0	\$10.0						
Commodities	\$0.0	\$0.0	analis constant of a				JENTS	a finantan dan bir nombiyan
Equipment	\$0.0	\$0.0 ¢40.0	Fatimated		Setimated		Entimated	
	\$10.0	\$16.0	Estimated	Estimated		Estimated	Estimated	
	\$1.1 \$47.4	φ1.1 Φ47.4	FF1 1999	FF1 2000	FF12001	FF1 2002	FF1 2003	
Project I otal	\$17.1	\$17.1				.		la fact so antisette processa ana cinantifacas da
		0.0						
Full-time Equivalents (FIE)	0.0	0.0	Delles		- thousanda a	i delloro	สร้างและ - จังหลางและรังประสาทางการจากสาทางได้เหลือกั	
Other Bessures	·	· · · · ·	Dollar amount	s are snown i	n thousands o	l donars.	<u> </u>	T
			l	l <u></u>	I	<u> </u>		<u> </u>
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								2 2
	Project Nur						· 	FORM 34
	Project Nur	mber: 9810	0 ation Public		n and Saian	tific] [FORM 3A
1998	Project Nur Project Title	mber: 9810 e: Administr	0 ation, Public	c Information	n and Scien	tific		FORM 3A TRUSTEE
1998	Project Nur Project Title Manageme	mber: 9810 e: Administr	0 ation, Public ons	c Information	n and Scien	tific		FORM 3A TRUSTEE AGENCY
1998	Project Nur Project Title Manageme Agency: N	mber: 9810 e: Administr nt - Operati ational Oce	0 ation, Public ons anic & Atmo	c Information	n and Scien	tific		FORM 3A TRUSTEE AGENCY SUMMARY

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Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name ·	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
	· · · · · · · · · · · · · · · · · · ·					
·····	Subtota		0.0	0.0	0.0	
				Pei	rsonnel Total	\$0.0
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FFY 1998
	· ·	1	r			
:						
		·				
				· .		1
	:					
	· · · ·					
			ļ	<u> </u>	Travel Total	\$0.0
	Project Number: 98100	•	×.			ORM 3B
	Project Title: Administration Publi	c Information	and Scient	lific		Pareonnal
1998	Management - Operations					8. Travol
	Agency: National Oceanic & Atm	oenhorio Adr	ainistration			
	Agency. National Oceanic & Attri		musuation			
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Description	· · ·		FFY 199
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Juneau Federal Building			16.0
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When a non-trustee organ	ization is used, the form 4A is required.	Contractual Total	\$16
Commodifies Costs:		<u> </u>	Propos
		•	
		Commodities Total	\$0
	Project Number: 98100		ORM 3R
1000	Project Title: Administration, Public Information and Scientific		ntractual
1998	Management - Operations	Co	mmoditie
	Areneus Matienel Oceanic O Atmospheric Administration		
	Agency: National Oceanic & Atmospheric Administration		DETAIL

Printed: 7/30/97

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New Equipment Purchas	es:	Number	Unit	Propos
Those purchases associat	ed with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0
Existing Equipment Usag	ge:		Number	Inven
1998	Project Number: 98100 Project Title: Administration, Public Information and Scien Management - Operations Agency: National Oceanic & Atmospheric Administration	lific	F	ORM 31 quipmer DETAIL
				

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October 1, 1997 - September 30, 1998

Budget Category: Personnel Travel Contractual Commodities Equipment Subtotal General Administration Project Total	FFY 1997 \$56.4 \$41.0 \$15.7 \$0.0 \$0.0 \$113.1	FFY 1998 \$60.0 \$47.4 \$7.1 \$0.0 \$0.0	ADEC	ADF&G \$117.1	ADNR	USFS	DOI \$6.9	NO.
Personnel Travel Contractual Commodities Equipment Subtotal General Administration Project Total	\$56.4 \$41.0 \$15.7 \$0.0 \$0.0 \$113.1	\$60.0 \$47.4 \$7.1 \$0.0 \$0.0		\$117.1			\$6.9	
Personnel Travel Contractual Commodities Equipment Subtotal General Administration Project Total	\$56.4 \$41.0 \$15.7 \$0.0 \$0.0 \$113.1	\$60.0 \$47.4 \$7.1 \$0.0 \$0.0						
Travel Contractual Commodities Equipment Subtotal General Administration Project Total	\$41.0 \$15.7 \$0.0 \$0.0 \$113.1	\$47.4 \$7.1 \$0.0 \$0.0						
Contractual Commodities Equipment Subtotal General Administration Project Total	\$15.7 \$0.0 \$0.0 \$113.1	\$7.1 \$0.0 \$0.0						
Commodities Equipment Subtotal General Administration Project Total	\$0.0 \$0.0 \$113.1	\$0.0 \$0.0						
Equipment Subtotal General Administration Project Total	\$0.0 \$113.1	\$0.0		and the second	inimi in ling mener inter	Advent a strong and they have be	an a	
Subtotal General Administration Project Total	\$113.1			LONG R/	ANGE FUNDI	NG REQUIRE	MENTS	
General Administration Project Total		\$114.5	Estimated	Estimated	Estimated	Estimated	Estimated	
Project Total	\$9.6	\$9.5	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
	\$122.7	; \$124.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	and a state of the sector and the foreign
	·							
Full-time Equivalents (FTE)	1.1	1.1	a definition of a subservation of the second	وسنتك سيرويه ورجا والمحاور والمستوا	a na sa na sa na sa na sa na sa	alezan ale na can tale agrigementeran adressan	and the second secon	the Assessment Construction side and
Other Deserves -			Dollar amount	s are shown in	thousands of	dollars.		
Other Resources					J			
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						تربي مربع		
	oiect Number	: 98100						
Pr	oject Title: Ac	 Iministration	Public Info	rmation and			2	`
1998	ojool nile. Al	Dublic Advis		mation and			SUM	MARY
	anagement - I	Public Advis	sory Group					1#17 \$1 \$ 1
Ag	ency: Multiple	e						
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October 1, 1997 - September 30, 1998

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Budget Category: Personnel Travel Contractual Commodities Equipment	FFY 1997 \$50.4 \$41.0 \$15.7 \$0.0	FFY 1998 \$54.0 \$47.4						
Personnel Travel Contractual Commodities Equipment	\$50.4 \$41.0 \$15.7 \$0.0	\$54.0 \$47.4						
Fersonner Travel Contractual Commodities Equipment	\$50.4 \$41.0 \$15.7 \$0.0	\$54.0						
Contractual Commodities Equipment	\$41.0 \$15.7 \$0.0	\$47.4						
Commodities Equipment	\$15.7							
Equipment	\$0.0	\$7.1						
Subtotal		\$0.0 \$0.0	երին ուները է։ Երիսերին հետումներին անցել է։	LONG R			AENITS	e antalana madana miya midan a din s
S UDTOTOTO I	\$0.0	\$0.0 ¢109.5	Fatimated	LUNG RA			Entimated	1
Concern Administration	\$107.1	\$108.5 \$9.6	Estimated	Estimated	ESUMALEO	ESUMALEO	ESUMALEO	
General Administration	φ0.7 ¢145.0	\$0.0 \$147.1	FFT 1999	FFT 2000	FFT 2001	FF1 2002	FF1 2003	
Project Total		Φ117.1					•	
Full time Faultucients (FTF)		1.0						
	1.0	1.0	Dellerenetur	a are chaura i			n and constrained an allow and constrained agents	f nage statiget establish marks and e sources
Othor Resources			Dollar amount	s are snown ii	T thousands of	Tuoliars.		Т
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				 				EODM 24
	Project Nun	nber: 9810)				•	FORM 3A
1998	Project Nun Project Title	nber: 9810) ation, Public	Informatior	n and Scient	tific	•	FORM 3A TRUSTEE
1998	Project Nun Project Title Managemen	nber: 9810 : Administra nt - Public A) ation, Public	Informatior	n and Scient	tific		FORM 3A TRUSTEE AGENCY
1998	Project Nun Project Title Managemer Agency: Ał	nber: 98100 : Administra nt - Public A K Dept. of F) ation, Public dvisory Gro ish and Gar	Informatior oup ne	n and Scient	tific		FORM 3A TRUSTEE AGENCY SUMMARY



Personnel Costs:	Personnel Costs:		Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
Womac	Administrative Assistant II		, 12.0	4.5		54.0
		5 .				
	· ·					
	Subtotal		12.0	4.5	0.0	
		······································		Per	sonnel Total	\$54.0
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FFY 1998
Member travel from various l	ocations					
Regular Meetings (3 on	e day meetings/1 two day meeting)					21.4
Special Meetings/Review	ws (FY 98 Work Plan, Restoration Workshop)					4.0
Field Trip						22.0
Note: Typical PAG mee	ting cost is approximately \$5,100					-
For a 2 day meeting, ad	d \$1.000 in per diem costs.					
		م <u>ــــــــــــــــــــــــــــــــــــ</u>			Travel Total	\$47.4
	[
	Project Number: 98100		<i>.</i>		F	ORM 3B



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Contractual Costs:			Propose
Description			FFY 199
Postage and courier Teleconferencing Public Notice/Announce ADA Compliance Other meeting costs	ments for PAG meetings (approx \$600 per meeting)		1 1 2 1 1
	•		
When a non-trustee oro	anization is used, the form 4A is required.	Total	\$7
Commodities Costs:			Propos
Description			FFY 19
			, 1 , 1 1
	Commodition	Total	¢r
		Total	φι
1998	Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Public Advisory Group Agency: AK Dept. of Fish and Game	F(Cor Cor E	ORM 3B itractual nmoditie DETAIL
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New Equipment Purchases:		Number	Unit	Proposed
Description		of Units	Price	FFY 1998
Those purchases associated w	ith replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
Existing Equipment Usage:			Number	Inventory
Description		·	of Units	Agency
		· · ·		
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient Management - Public Advisory Group Agency: AK Dept. of Fish and Game	ific	F	ORM 3B quipment DETAIL
f 70	DRAFT			Printed: 7/3

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Printed: 7/30/97

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October 1, 1997 - September 30, 1998

Budget Category: FFY 1997 Personnel \$6. Travel \$0. Contractual \$0. Commodities \$0. Equipment \$0. Subtotal \$6. General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) C Other Resources C Comments: \$6.	FFY 1998 0 \$6.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 1 0.1	Estimated FFY 1999 Dollar amoun	LONG R/ Estimated FFY 2000	ANGE FUNDIN Estimated FFY 2001	NG REQUIREN Estimated FFY 2002	AENTS Estimated FFY 2003	
Personnel \$6. Travel \$0. Contractual \$0. Commodities \$0. Equipment \$0. Subtotal \$6. General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) (Other Resources (Comments:	0 \$6.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$6.0 9 \$0.9 1 0.1	Estimated FFY 1999 Dollar amoun	LONG RA Estimated FFY 2000	ANGE FUNDIN Estimated FFY 2001	NG REQUIREN Estimated FFY 2002	AENTS Estimated FFY 2003	
Personnel \$6. Travel \$0. Contractual \$0. Commodities \$0. Equipment \$0. Subtotal \$6. General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) (Other Resources (Comments:	0 \$6.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$6.0 9 \$6.9 1 0.1	Estimated FFY 1999 Dollar amoun	LONG R/ Estimated FFY 2000	ANGE FUNDIN Estimated FFY 2001	NG REQUIREN Estimated FFY 2002	AENTS Estimated FFY 2003	
Iravel \$0. Contractual \$0. Commodities \$0. Equipment \$0. Subtotal \$6. General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) C Other Resources C Comments: C	0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$0.0 0 \$6.9 1 0.1	Estimated FFY 1999 Dollar amoun	LONG R/ Estimated FFY 2000	ANGE FUNDIN Estimated FFY 2001	NG REQUIREM Estimated FFY 2002	AENTS Estimated FFY 2003	
ContractualS0. CommoditiesS0. EquipmentS0. SubtotalS6. General AdministrationS0. Project TotalS6. Full-time Equivalents (FTE)C Other ResourcesCOMMENTS:	0 \$0.0 0 <t< td=""><td>Estimated FFY 1999 Dollar amoun</td><td>LONG RA Estimated FFY 2000</td><td>ANGE FUNDIN Estimated FFY 2001</td><td>NG REQUIREN Estimated FFY 2002</td><td>AENTS Estimated FFY 2003</td><td></td></t<>	Estimated FFY 1999 Dollar amoun	LONG RA Estimated FFY 2000	ANGE FUNDIN Estimated FFY 2001	NG REQUIREN Estimated FFY 2002	AENTS Estimated FFY 2003	
Commodities \$0. Equipment \$0. Subtotal \$6. General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) (Other Resources (Comments:	0 \$0.0 0 \$0.0 0 \$0.0 0 \$6.0 9 \$6.9 1 0.1	Estimated FFY 1999 Dollar amoun	LONG R/ Estimated FFY 2000	ANGE FUNDI Estimated FFY 2001	NG REQUIREN Estimated FFY 2002	AENTS Estimated FFY 2003	
Equipment \$0. Subtotal \$6. General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) C Other Resources C Comments: C	0 \$0.0 0 \$6.0 9 \$0.9 9 \$6.9 1 0.1	Estimated FFY 1999 Dollar amoun	LONG R/ Estimated FFY 2000	ANGE FUNDI Estimated FFY 2001	f dollars.	Estimated FFY 2003	
Subtotal \$6. General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) (Other Resources Comments:	0 \$6.0 9 \$0.9 9 \$6.9 1 0.1	Estimated FFY 1999 Dollar amoun	Estimated FFY 2000 ts are shown i	Estimated FFY 2001	Estimated FFY 2002	Estimated FFY 2003	
General Administration \$0. Project Total \$6. Full-time Equivalents (FTE) (Other Resources Comments:	9 \$0.9 9 \$6.9 1 0.1	FFY 1999 Dollar amoun	FFY 2000	n thousands o	f dollars.	FFY 2003	
Project Total \$6. Full-time Equivalents (FTE) (Other Resources Comments:	9 \$6.9 1 0.1	Dollar amoun	ts are shown i	n thousands o	f dollars.		
Full-time Equivalents (FTE)	1 0.1	Dollar amoun	ts are shown i	n thousands o	f dollars.		
Full-time Equivalents (FTE) (Other Resources Comments:	1 0.1	Dollar amoun	ts are shown i	n thousands o	f dollars.		
Other Resources Comments:	1	Dollar amoun	ts are shown i	n thousands o	f dollars.		I
Other Resources Comments:	1	<u> </u>	<u> </u>	<u> </u>		<u>[</u>	<u> </u>
Comments:					· · ·		
	,						
					:		
1998 Project N Project T Managen Agency:	umber: 9810 tle: Administra	0 ation, Public Advisory Gro	c Information	n and Scien	tific		FORM 3A TRUSTEE AGENCY
	Dept. of the li	nterior				~	

October 1, 1997 - September 30, 1998

Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
	· · · · · · · · · · · · · · · · · · ·					0.0
Mutter	Regional Environmental Assistant		1.0	6. 0		6.0
						0.0
						0.0
						0.0
	-					0.0
						0.0
						0.0
						0.0
		• •				0.0
		-	,			0.0
	Subtotal	an a	1.0	6.0	0.0	
				Per	sonnel Total	- \$6.0
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FFY 1998
				1		,
					L	
				·	Travel Total	\$0.0
		<u></u>	······			
	Project Number: 98100				F	FORM 3B
1008	Project Title: Administration, Public	Informatior	n and Scient	ific	F	Personnel
1990	Management - Public Advisory Gro	oup				& Travel
	Agency: Dept. of the Interior	•				DETAIL
					L	har bas 1 / XI has
f 70	DRAI	-]				Printed: 7/3

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			Flopo
Description			FFY 1
		1	
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	·		
When a non-trustee on	ganization is used, the form 4A is required.	ual Total	
Commodities Costs:			Prop
Description			FFY
	•		
			.3
	·		.3 _1 _1
			. 4
	Commodit	les Total	.3 * * *
	Commodit	ies Total	
······································	Commodit Project Number: 98100	les Total	DRM 3
4000	Commodit Project Number: 98100 Project Title: Administration, Public Information and Scientific	les Total	DRM 3
1998	Commodit Project Number: 98100 Project Title: Administration, Public Information and Scientific	ies Total F(Con	DRM 3
1998	Commodit Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Public Advisory Group	ies Total F(Con Con	DRM 3
1998	Commodit Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Public Advisory Group Agency: Dept. of the Interior	les Total FC Con Con	DRM 3 Itractua nmodit DETAIL

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New Equipment Purchases:		Number	Unit	Proposed
Description		of Units	Price	FFY 1 9 98
				·
Those purchases associated wit	h replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
Existing Equipment Usage:			Number	Inventory
Description		. ¹	of Units	Agency
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient Management - Public Advisory Group Agency: Dept. of the Interior	ific	F	ORM 3B quipment DETAIL

Printed: 7/30/97

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October 1, 1997 - September 30, 1998

	Authorized	Flupuseu			1 1001 11(0)			
Budget Category:	FFY 1997	FFY 1998	ADEC	ADF&G	ADNR	USFS	DOI	NOA
			\$61.2	\$55.7	\$54.2	\$70.8	\$51.9	\$66.7
Personnel	\$257.5	\$261.3						
Travel	\$49.0	\$51.0					et et e	
Contractual	\$0.0	\$0.0						
Commodities	\$9.0	\$9.0	and prover a serie of a structure of a structure of	aginaansis meropakan manan ana seren			ال الله . 1933 - بالم التي الم . 1940 - ما الله Arabic Lance (الم الله الم الله .	
Equipment	\$0.0	\$0.0		LONG RA	ANGE FUNDI	NG REQUIRE	MENTS	
Subtotal	\$315.5	\$321.3	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$38.7	\$39. 2	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$354.2	\$360.5	The second second second second second		·····		and the state of the state ways	
Full-time Equivalents (FTE)	3.0	3.0					, ,	
	· · · · · · · · · · · · · · · · · · ·	<u> </u>	Dollar amount	s are shown in	thousands of	dollars.	yn 8 yn rae fran charachun fan Andriau Andriau far ann	
Other Resources							1	
Comments:	<u>. 1</u> I		<u>ا ا</u>	l	······································	· ·	r	.
								.;
						, *		
	Project Nun Droje of Title	nber: 9810	0 otion Dubiis	1.560 mm = 4% = -		+:6i.c		. 2
1998	Project Nun Project Title Manageme	nber: 9810 e: Administr nt - Restora	0 ation, Public	Information	and Scient	tific	SUN	IMARY

October 1, 1997 - September 30, 1998

Budget Category:	Authorized FFY 1997	Proposed FFY 1998						
	1111001	1111000						
Personnel	\$43.2	\$43.2						
Travel	\$8.0	\$10.0						
Contractual	\$0.0	\$0.0						
Commodities	\$1.5	\$1.5	ก เป็นสมาชิญสารมากรับแหนด (ค. 144	and an an after theme		ىپ يەت يېرىڭ ۋىغايا بايغا ئۇغايا بىرىغا	e na se en	normanisticon social d'Attrice conserves
Equipment	\$0.0	\$0.0		LONG R/	ANGE FUNDIN	IG REQUIREN	MENTS	
Subtotal	\$52.7	\$54.7	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$6.5	\$6.5	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$59.2	\$61.2						
			별가에 있다. 전다리 : 100 km					
Full-time Equivalents (FTE)	0.5	0.5			n an detailtearnan a' scàr ar scarae	genetian Marchanes, pagenain a	مەرەبەرەر مەرەب مەرەب بەرەب يەرەب	e efficient en auto providence d'a su coè a prov
			Dollar amount	s are shown i	n thousands o	f dollars.	1	· · · · · · · · · · · · · · · · · · ·
Jther Resources			L		<u> </u>	<u> </u>	<u> </u>	<u> </u>
								••• • •
· 	Project Nun	nher: 0810						
1998	Project Nun Project Title Manageme Agency: Al	nber: 9810 e: Administra nt - Restora K Dept. of E	0 ation, Public tion Work F nvironment	Information orce al Conserva	n and Scien	tific	-	FORM 3A TRUSTEE AGENCY SUMMARY

October 1, 1997 - September 30, 1998

Personnel Costs:	· · · · · · · · · · · · · · · · · · ·	GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 199
Fay	6 Month Liaison		6.0	7.2		43.2
						an a
	Subto		6.0	/.2 Poi	0.0	\$43.7
Travel Costs:	a na na ana ang ang ang ang ang ang ang	Ticket	Round	Total	Daily	Propose
Description	******	Price	Trips	Days	Per Diem	FFY 199
Trustee Travel Liaison travel		,				5.(5.(
				* <i>*,</i>		
	·				•	
			- -		"Travel Total	\$10.0
1998	Project Number: 98100 Project Title: Administration, Pub Management - Restoration Work Agency: AK Dept. of Environme	lic Informatior Force ntal Conserva	n and Scient	ific		FORM 3B Personnel & Travel DETAIL
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Contractual Costs:			Proposed
Description			FFY 1998
When a non-trustee organization	on is used, the form 4A is required.	ontractual Total	\$0.0
Commodities Costs:			Proposed
Description			FFY 1998
Office supplies/other liaison co	sts		1.5
	Con	modities Total	\$1.5
1998	Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force Agency: AK Dept. of Environmental Conservation	F Cor Co	ORM 3B ntractual & mmodities DETAIL
f 70			

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New Equipment Purcl	hases:	Number	Unit	Propose
Description		of Units	Price	FFY 199
hose purchases asso	ciated with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.
Existing Equipment U	sage:		Number	Invento
Description		•	of Units	Agen
1998	Project Number: 98100 Project Title: Administration, Public Information and Scient Management - Restoration Work Force Agency: AK Dept. of Environmental Conservation	ific	F	FORM 3B Equipment DETAIL
7(C)				Printed:

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October 1, 1997 - September 30, 1998

SUGGOT L'STOGOD/		Floposed						
Buuger Calegory.	FFY 1997	FFY 1998						
Personnel	\$39.6	\$40.2						
Travel	\$8.0	\$8.0						
Contractual	\$0.0	\$0.0						
Commodities	\$1.5	\$1.5						
Equipment	\$0.0	\$0.0	Ale candina re the second of the college of the fee	LONG R	ANGE FUNDIN	IG REQUIREN	MENTS	
Subtotal	\$49.1	\$49.7	Estimated	Estimated	Estimated	Estimated	Estimated	1
General Administration	\$5.9	\$6.0	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$55.0	\$55.7		·		1		
						- Approximate and apply the Constraint and apply in the		
Full-time Equivalents (FTE)	0.5	0.5	and the second second second second second	na a mana a mana ang ana a	isteorius variation tentratisto er minfeksistenere	al a far and a far a far a far and a far a fa	initiation in the same A council a subscription of	
			Dollar amount	s are shown i	n thousands o	f dollars.		
Other Resources								
								•* • •
·								••
	Project Nur	nber: 9810	0 ation Public		n and Scien	tific		FORM 3A

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October 1, 1997 - September 30, 1998

Personnel Costs:		GS/Range/	Months	Monthly		Propose
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 199
Slator	Lipipon		6.0	67		40.5
Sidler			0.0	0.7		40.2
	-					
	Subto	tal Casse y - Leo	6.0	6.7	0.0	
				Pe	sonnel Total	\$40.2
Fravel Costs:		Ticket	Round	Total	Daily	Propose
Description		Price	Trips	Days	Per Diem	FFY 199
Trustee Travel						5 (
Liaison travel						3.(
				τ.		
						. i
				~		
	· · · · · · · · · · · · · · · · · · ·					
					Travel Total	\$8.0
]	
	Project Number: 98100	•	•		F	FORM 3B
1998	Project Title: Administration, Pub	lic Information	n and Scient	tific	F	Personnel
1000	Management - Restoration Work	Force				& Travel
	Agency: AK Dept. of Fish and G	ame				DETAIL
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- 494-87 NGA - 1).				Finteo



October 1, 1997 - September 30, 1998

Contractual Costs:	Proposed
Description	FFY 1998
Moon a pap tructop propriotion is used the form (A) is required	al *0.0
When a non-trustee organization is used, the form 4A is required.	aij \$0.0
Commodities Costs:	FEV 1009
Office supplies/other liaison costs	1.5.
Commodities Tota	ai \$1.5
1998 Project Number: 98100 Project Title: Administration, Public Information and Scientific C Management - Restoration Work Force C Agency: AK Dept. of Fish and Game C	FORM 3B ontractual & commodities DETAIL

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iew Equipment Purchases	· · · · · · · · · · · · · · · · · · ·	Number	Unit	Propose
		or Units	Price	<u> </u>
	-			
hose purchases associated	with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
xisting Equipment Usage			Number	Inventor
		i		
			-	.) .) :
			• •	
			1 1	
1998	Project Number: 98100 Project Title: Administration, Public Information and Scientifi Management - Restoration Work Force Agency: AK Dept. of Fish and Game	c		ORM 3B quipment DETAIL

October 1, 1997 - September 30, 1998

	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
Demenand	642.0	, (42.0						
Personnei	\$43.2	\$43.2						
	\$3.0	\$3.0						
Contractual	\$0.0	\$U.U \$1.5						
Commodities	\$1.5	φ1.0 ¢0.0	Berthald and the	LONCR	NCE FUNDU		AENTS	
Cubtetel	\$0.0	\$U.U	Catimated		Setimated	I Entimated	Entimoted	
	\$41.1	\$41.1 ¢e.5	Estimated	Estimated	Estimated	Estimated	Estimated	
	\$0.5	\$0.5 *54.0	FFT 1999	FFT 2000	FF1 2001	FF.1 2002	FFT 2003	_
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Full-time Equivalents (ETE)	0.5	0.5						1월 17일 - 18일 - 18일 1918년 - 1818년 - 1818년 - 1818년 1918년 - 1818년 - 1
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1998	Project Title	e: Administr	ation, Publi	c Informatio	n and Scier	ntific		TRUSTEE
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	Agency: Al	K Dept: of N	latural Reso	ources				SUMMARY
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Personnel Costs:		GS/Range/	Months	Monthly		Proposed
lame	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
Fries	6 Month Liaison		6.0	7.2		43.2
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	Subtota	al	6.0	7.2	0.0	
				Pei	rsonnel Tota	\$43.2
ravel Costs:		Ticket	Round	Total	Daily	Proposed
escription		Price	Trips	Days	Per Diem	FFY 1998
iaison travel				,		3.0
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		· · · ·			ravel Tota	\$3.0
1998	Project Number: 98100 Project Title: Administration, Publ	ic Information	n and Scient	tific		FORM 3B Personnel
	Management - Restoration Work Agency: AK Dept. of Natural Res	Force sources				& Travel DETAIL
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October 1, 1997 - September 30, 1998

Contractual Costs		Proposed
Description		FFY 1997
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	clated with replacement equipment should be indicated by placement of an R. Jsage:	ciated with replacement equipment should be indicated by placement of an R. New Equip Jsage:	ciated with replacement equipment should be indicated by placement of an R. New Equipment Total Isage: Number of Units

October 1, 1997 - September 30, 1998

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	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
Personnel	\$49.8	\$51.6						
Travel	\$10.0	\$10.0	옥 승규는 아이지 않는다. 양성 등 일이 있는 것이 있 같은 것이 같은 것이 있는 것이 있는 것이 있는 것이 있는 것이 있는 것이 있는 것이 없는 것				an da	
Contractual	\$0.0	\$0.0						
Commodities	\$1.5	\$1.5						
Equipment	\$0.0	\$0.0	and an address of the first of the first one of the state of the	LONG RA	NGE FUNDIN	IG REQUIRE	MENTS	
Subtotal	\$61.3	\$63.1	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$7.5	\$7.7	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$68.8	\$70.8					an a company and an a company and a	un con care, at an analyzed i see approved and there oppose
Full-time Equivalents (FTE)	0.5	0.5						
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1998	Project little	. Aaministr	ation, Public	intormation	n and Scien	UTIC		ACENOV
	Manageme	nt - Restora	ition Work F	orce				AGENUY
	Agency: De	ept. of Agric	ulture, Fore	st Service				SUMMARY
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Personnel Costs:			GS/Range/	Months	Monthly		Proposed
Name	Position Description		Step	Budgeted	Costs	Overtime	FFY 1998
Gibbons	6 Month Liaison			6.0	8.6		51.6
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		Subtotal		6.0	8.6	0.0	001600
Travel Costa			Ticket	Bound	Total	Sonnel Total	Propose
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Trustee Travel Liaison travel	·					-	5.0 5.0
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			·		· · · · · · · · · · · · · · · · · · ·	Travel Total	\$10.0
1998	Project Number: 98100 Project Title: Administrati Management - Restoratio Agency: Dept. of Agricul	ion, Public on Work F iture, Fore	c Information orce est Service	and Scient	iific	F P	ORM 3B ersonnel & Travel DETAIL
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Contractual Costs:			Prop	pose
Description			FFY	199
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When a non-trustee or	ganization is used, the form 4A is required.	Contractua	I Total	\$0.0
Commodities Costs:			Prop	pose
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Office supplies/other li	aison costs			1.5
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	·			
		Commodities	Total	\$1
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			FORM	20
	Project Number: 98100	1		ענ
4000	Project Number: 98100 Project Title: Administration, Rublic Information and Scien	tific	Contractu	ial 8
1998	Project Number: 98100 Project Title: Administration, Public Information and Scien Management - Restoration Work Force	tific	Contractu	ial 8
1998	Project Number: 98100 Project Title: Administration, Public Information and Scien Management - Restoration Work Force	tific ·	Contractu Commodi	ial 8 ities
1998	Project Number: 98100 Project Title: Administration, Public Information and Scien Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service	tific	Contractu Commodi DETAI	ial 8 ities

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Description of Units Price FFY 1 Image: Description Image: Description Image: Description Image: Description Number Image: Description Image: Description	New Equipment Purch	ases:	Number	Unit	Proposed
Those purchases associated with replacement equipment should be indicated by placement of an R. New Equipment Total \$\$ Existing Equipment Usage: Number Inven of Units Age Description of Units Inven Age Project Number: 98100 FORM 31 Equipment Jeguine and Scientific Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service DETAIL	Description		of Units	Price	FFY 199
1998 Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force Formation and Scientific Det Title: Det Title					
Those purchases associated with replacement equipment should be indicated by placement of an R. New Equipment Total \$ Existing Equipment Usage: of Units Age Description of Units Age 1998 Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service FORM 31 Equipment DETAIL					
Those purchases associated with replacement equipment should be indicated by placement of an R. New Equipment Total 3 Existing Equipment Usage: Number Inven of Units Age Description of Units Age Inven of Units Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service FORM 31					
Project Number: 98100 FORM 31 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force FORM 31 Agency: Dept. of Agriculture, Forest Service Description		-			
Those purchases associated with replacement equipment should be indicated by placement of an R. New Equipment Total S Existing Equipment Usage: Number Number Inven of Units Age Description of Units Age Project Number: 98100 Forgect Title: Administration, Public Information and Scientific Management - Restoration Work Force FORM 3I Agency: Dept. of Agriculture, Forest Service DETAIL					
Project Number: 98100 Formation Formation <td></td> <td></td> <td></td> <td></td> <td></td>					
Project Number: 98100 Project Title: Administration, Public Information and Scientific FORM 3I Equipment - Restoration Work Force Agency: Dept. of Agriculture, Forest Service Eduitation					
1998 Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service FORM 31 Equipment DETAIL	Those purchases associ	ated with replacement equipment should be indicated by placement of an R	New Faul	nment Total	\$0.0
Description of Units Age 1998 Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service FORM 31 Equipment DETAIL	Existing Equipment Us	age:		Number	Inventor
1998 Project Number: 98100 Project Title: Administration, Public Information and Scientific Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service FORM 31 Equipment DETAIL	Description			of Units	Agenc
1998 Project Number: 98100 FORM 31 Project Title: Administration, Public Information and Scientific FORM 31 Management - Restoration Work Force DETAIL Agency: Dept. of Agriculture, Forest Service DETAIL					, <i>4</i> , 1
1998 Project Number: 98100 FORM 31 Project Title: Administration, Public Information and Scientific Equipmer Management - Restoration Work Force DETAIL Agency: Dept. of Agriculture, Forest Service DETAIL					
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1998 Project Title: Administration, Public Information and Scientific Equipment Management - Restoration Work Force DETAIL Agency: Dept. of Agriculture, Forest Service		Project Number: 98100		F	ORM 3B
	1998	Project Title: Administration, Public Information and Scien Management - Restoration Work Force Agency: Dept. of Agriculture, Forest Service	tific	Ec [uipment DETAIL
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Budget Category:	FFY 1997	FFY 1998						
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Personnel	\$33.7	\$35.1						
Travel	\$10.0	\$10.0						
Contractual	\$0.0	\$0.0						
Commodities	\$1.5	\$1.5	and the second	and the second		and a state of the	and the company of the constants	
Equipment	\$0.0	\$0.0		LONG RA	ANGE FUNDIN	NG REQUIREN	MENTS	
Subtotal	\$45.2	\$46.6	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$5.1	\$5.3	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$50.3	\$51.9						
Full-time Equivalents (FTE)	0.5	0.5	1. A Same allestangen weren alle ander a	and a construction of the state of the state of the state of the	a and Course the set to pay observation	น. เรื่องเวลล์ เป็น เลยาะสะสาร์ สายแห่งเป็น	amat state i martana ana ana ana ana ana ana ana ana ana	and the second secon
			Dollar amount	s are shown in	n thousands of	f dollars.		
Other Resources					<u> </u>		L	
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	Project Nur	nder: 9810	U					FORM 3A
1998	Project Title	e: Administr	ation, Public	: Information	n and Scien	tific		TRUSTEE
1550	Manageme	nt - Restora	ation Work F	orce				AGENCY
	Agency: De	ept. of the li	nterior					SUMMARY
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Personnel Costs:		GS/Range/	Months	Monthly		Propose
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 199
				-		
Berg	Liaison - FWS		5.0	5.9		29.5
Kice	Liaison - NPS		1.0	5.6		5.5
				5		
	,					
	Subtota	e esta la transforma e	6.0	11.5	0.0	يىنى را ئانىيا رۇپۇ ئولايۇ ئالىقى كۈنى كۆچۈ ئىرىن
			- -	Pe	sonnel Total	\$35.1
Travel Costs:		Ticket	Round	Total	Daily	Propose
Description		Price	Trips	Days	Per Diem	FFY 199
Trustee travel	· , ,					5.0
Liaison travel				,		5.0
						.1
						*
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		5		L	Travel Total	\$10.0
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	Project Number: 98100					ORM 3B
4000	Project Title: Administration Publ	c Information	and Scien	tific		Personnel
1998	Management - Restoration Work	Force	, and ooion		'	8. Travol
	Agency Dent of the Interior				1 1	
	Agency: Dept. of the Interior					
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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Contractual Cos	ts:	Proposed
Description		FFY 1998
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When a non-trust	ee organization is used, the form 4A is required. Contract	ual Total \$0.0
Commodities Co	ists:	Proposed
Description		FFY 1998
Office supplies/ot	her liaison costs	1.5
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	Commodit	ies Iotai \$1.5
	Droject Number: 08100	EODM 2D
		FURIVI 3D
1998	Project Litle: Administration, Public Information and Scientific	Contractual &
	Management - Restoration Work Force	Commodities
	Agency: Dept. of the Interior	DETAIL
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October 1, 1997 - September 30, 1998

lew Equipment Purchases:	Number	Unit	Propose
Description	of Units	Price	FFY 199
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hose purchases associated with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
escription		of Units	Inventor
Project Number: 98100 Project Title: Administration, Public Information and Scie	ntific		ORM 3B
1998 Project Number: 98100 Project Title: Administration, Public Information and Scie Management - Restoration Work Force Agency: Dept. of the Interior	entific	F E	ORM 3B quipment DETAIL

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DRAFT FFY 98 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

	Authorized	Proposed								
Budget Category:	FFY 1997	FFY 1998								
Personnel	\$48.0	\$48.0								
Travel	\$10.0	\$10.0								
Contractual	\$0.0	\$0.0				Wat A will		li dan da si		
Commodities	\$1.5	\$1.5								
Equipment	\$0.0	\$0.0	anti a l'ha d'anti al tradicione de la protecció	LONG RA	NGE FUNDIN	IG REQUIREN	MENTS .	n Tar ung silapi - tarah Authopha kang sanak kang		
Subtotal	\$59.5	\$59.5	Estimated	Estimated	Estimated	Estimated	Estimated	1		
General Administration	\$7.2	\$7.2	FFY 1998	FFY 1999	FFY 2000	FFY 2001	FFY 2002			
Project Total	\$66.7	\$66.7						[
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Full-time Equivalents (FTE)	0.5	0.5	an a	- 1947-1960 - 11 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	e damagene met och och och dam antener			یون در میموکندود هرون مور میمانند در در		
			Dollar amoun	s are shown in	n thousands of	dollars.				
Other Resources					l					
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	Project Nur	nber: 9810						FORM 3		
1998	Project Nur Project Title Manageme Agency: N	nber: 9810 e: Administra nt - Restora ational Oce	0 ation, Public ition Work F anic & Atmo	c Information orce ospheric Adr	n and Scien	tific		FORM 3 TRUSTE AGENC		

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Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
						0.0
Morris	6 Month Liaison	·	6.0	8.0		48.0
		<i>4</i>				0.0
		·				0.0
						0.0
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		·				0.0
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	Subtata	1 Martine State States		<u>,</u>	0.0	0.0
	Sublota		0.0	Bei	5000 Sonnel Total	\$48.0
Travel Coster		Ticket	Pound	Total	Doily	Proposed
Description		Drice	Trine	- Dave	Daily Per Diem	EEV 1005
Description		Flice	Прэ	. Days		0.0
Trustee Travel	· ·					5.0
Liaison travel					:	5.0
						0.0
						0.0
						0.0
						0.0
						0.0
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			z			0.0
					· .	0.0
						0.0
	·				Travel Total	\$10.0
					1	
	Project Number: 98100					FORM 3B
4000	Project Title: Administration. Publi	ic Information	and Scient	tific		Personnel
1998	Management - Restoration Work I	Force		-	'	& Travel
	Agency: National Oceania ? Atm	oenhoria Ada	oinistration	i		DETAIL
	Agency. National Oceanic & Alm	ospheric Adr	mistation			DETAIL
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Contractual Costs:			Proposed
Description	· ·		FFY 1998
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When a non-trustee organizati	on is used, the form 4A is required.	Contractual Total	\$0.0
Commodities Costs:			Proposed
Description		· .	
Office supplies/other liaison co	osts '		1.5
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			•
			-
		Commodities Total	\$1.5
	Project Number: 98100	F	ORM 3B
1998	Project Title: Administration, Public Information and Scientific	Cor	ntractual &
1000	Management - Restoration Work Force	Cor	mmodities
	Agency: National Oceanic & Atmospheric Administration		DETAIL

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October 1, 1997 - September 30, 1998

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Runner	Unit	Proposed
of Units	Price	FFY 199
New Equi	pment Total	\$0.0
	of Units	Agenc
3		.4 .2 .2
	F	ORM 3B
	New Equi	New Equipment Total Number of Units



Revision 7-23-97 approved TC 8-6-97

Habitat Protection and Acquisition Support

Project Number:	98126
Restoration Category:	Habitat Protection
Proposer:	AK Dept. of Natural Resources
Lead Trustee Agency:	ADNR, USFS
Cooperating Agencies:	ADF&G, USFS, DOI
Duration:	FFY 1998 - TBD
Cost FY 98:	\$781.4
Cost FY 99:	\$ To be determined
Cost FY 00:	\$ To be determined
Cost FY 01:	\$ To be determined
Geographic Area:	Prince William Sound, Kenai Peninsula, Alaska Peninsula Kodiak Archipelago
Injured Resource/Service:	Multiple Resources

ABSTRACT

Project 98126 provides negotiation support to the Trustee Council in order to reach closure on habitat protection priorities. This support includes those services such as title reports, appraisals, on site inspections, hazardous materials surveys, surveys, timber cruises and reviews, and other services necessary for the successful completion of habitat protection negotiations. The Trustee Council has completed acquisition packages with 8 large parcel landowners resulting in the protection of 420,640 acres of land. Agreements with three additional landowners would result in protection of an additional 175,000 acres of land. In addition, the Trustee Council has reached closure on the acquisition of nearly 30 small parcels encompassing more than three thousand acres. Negotiations and closing activities continue with additional large parcel and small parcel landowners.

INTRODUCTION

This project is designed to support habitat protection activities of the Trustee Council and is a continuation of the Comprehensive Habitat Protection Process. These activities include resource evaluations, appraisals, title searches, hazardous materials surveys and other efforts necessary for the Trustee Council to achieve habitat protection objectives. In 1993, the Restoration Team, Habitat Protection Work Group, conducted a survey and assessment of selected large parcels of private land (>1000 acres) within the oil spill zone. The lands were mapped, scored and ranked to determine the restoration value of these areas to injured resources and services and the benefits that could be achieved through habitat protection.

Successful acquisitions have been completed with owners of lands within Kachemak Bay State Park and on northern Afognak Island resulting in the purchase of the park inholdings and in the establishment of the Afognak Island State Park; with Akhiok-Kaguyak and Old Harbor Native Corporation for the purchase of habitat protection rights on lands located within the Kodiak National Wildlife Refuge; with Eyak Corporation for timber rights in the Orca Narrows viewshed; with the Kodiak Island Borough for lands on Shuyak Island that have been included in Shuyak Island State Park; and with Chenega Corporation for habitat protection rights in western Prince William Sound. A purchase agreement for 32,470 acres has been signed with English Bay Corporation. Tatitlek Corporation has made an offer that has been accepted by the Trustee Council for 68,888 acres of land in eastern Prince William Sound. The Council most recently made an offer that was accepted by the Eyak Corporation Board of Directors for protection of 75,000 acres of land in eastern Prince William Sound. Negotiations are continuing with Afognak Joint Venture and Koniag for fee title lands.

Acquisition	Acreage	Total Price	EVOS Trust Fund
Kachemak Bay State Park	23,800	\$22,000,000	\$7,500
Inholdings			
Seal Bay / Tonki Cape	41,549	\$39,549,333	\$39,549,333
Orca Narrows (timber rights)	2,052	\$3,650,000	\$3,650,000
Akhiok-Kaguyak Inc.	118,674	\$46,000,000	\$36,000,000
Old Harbor	31,609	\$14,500,000	\$11,250,000
Koniag (fee)	59,689	\$26,500,000	\$19,500,000
Koniag (limited term easement)	57,082	\$2,000,000	\$2,000,000
Shuyak Island-Kodiak Borough	26,665	\$42,000,000	\$42,000,000
Chenega	59,520	\$34,000,000	\$24,000,000

COMPLETED LARGE PARCEL ACQUISITIONS

In 1995, Volume III of the Comprehensive Habitat Protection Process, *Small Parcel Process*, *Evaluation and Ranking* was completed. Responses to the solicitation for nominations of small parcels were processed and evaluated. The Trustee Council is currently moving forward with acquisition of a suite of small parcels that best meet the restoration goals and objectives identified by the Trustee Council. A current status report of these activities can be found in the Restoration Office's "Habitat Protection Program: Small Parcel Status Report."

Negotiations continue with several large parcel landowners as well as with numerous small parcel landowners. Reaching closure on these agreements requires substantial technical support. It is expected that Trustee Council efforts in this area will continue in the near term.

NEED FOR THE PROJECT

The objective of habitat protection is to identify and protect essential wildlife and fisheries habitats and associated services and to prevent further environmental damage to resources injured by the *Exxon Valdez* oil spill. Nineteen resources and services injured by the spill are linked to protection of upland and nearshore habitats. Protection of lands containing these habitats prevents additional injury to resources and services and natural support systems while recovery is taking place. Active negotiations and closing activities with landowners are currently taking place and anticipated to continue for at least one more year.

COMMUNITY INVOLVEMENT

The public has reviewed and commented favorably on all habitat protection efforts and has been highly supportive of habitat protection as a major restoration strategy into the future. All reports published as part of the Comprehensive Habitat Protection Process have been reviewed by the public. Input from natural resource and services specialists in the public sector was collected in a workshop conducted by The Nature Conservancy.

Members of local communities have previously had the opportunity to review habitat protection evaluation and ranking results and Trustee Council priorities. The Trustee Council continues to be receptive and responsive to public comment pertinent to habitat protection priorities and acquisitions. The Council's Public Advisory Group is briefed and the public is given the opportunity to comment prior to any Council action.

PROJECT DESIGN

A. Objectives

Habitat protection and acquisition is designed to protect lands linked to resources and services that were injured by the *Exxon Valdez* oil spill. Protection of these lands prevents additional injury to living resources and habitats, services and natural support systems while recovery is taking place. Habitat protection addresses cases where existing regulations affecting private land use may be inadequate to protect essential habitats of recovering resources and services. In situations where natural recovery is slow to occur or where direct restoration is neither technically feasible or cost effective, other measures need to be considered to mitigate injury. These may include replacement of injured resources and services with those that are equivalent. Replacement or acquisition of the equivalent means compensation for an injured, lost or destroyed resource by substituting another resource that provides the same or substantially similar services as the injured resource (56 Federal Register 8899 [March 1, 1991]).

The affected injured resources and associated services are listed below. Although habitat protection objectives and benefits for each of these resources and services differ depending on the particular parcel and the options acquired, general objectives and benefits are outlined below.

- Pink salmon, sockeye salmon, cutthroat trout, Dolly varden, herring: ensure maintenance of adequate water quality, riparian habitat and intertidal habitat for spawning and rearing.
- Bald eagle: ensure maintenance of adequate nesting habitat and reduce disturbance in feeding and roosting areas.
- Black oystercatcher: reduce disturbance to feeding and nesting sites.
- Common murre: reduce disturbance in nearshore feeding areas and near nesting colonies.
- Harbor seal and sea otters: reduce disturbance at haul-out sites, pupping sites, and in nearshore feeding areas.
- Harlequin duck: ensure maintenance of adequate riparian habitat for nesting and brood rearing, and reduce disturbance to nearshore feeding, molting, and brood-rearing habitats.
- Intertidal/subtidal biota: maintain water quality along shoreline and reduce disturbance in nearshore areas.
- Marbled murrelet: ensure maintenance of adequate nesting habitat and reduce . disturbance to nearshore feeding and broodrearing habitats.
- River otter: ensure maintenance of adequate riparian and shoreline habitats for feeding and denning.
- Recreation: Maintain or enhance public access for recreational opportunities, reduce disturbances that would create visual impacts.
- Wilderness: Maintain wilderness qualities, reduce impacts to wilderness qualities.
- Cultural resources: Maintain or reduce disturbance to cultural resource sites.
- Subsistence: Ensure subsistence opportunities in known harvest areas.

In FY 98, it is expected that negotiations and closing activities will continue with Afognak Joint Venture, Eyak Corporation, Tatitlek Corporation and Koniag.

Completing the Eyak and Tatitlek agreements will involve extensive title research and review, hazardous materials assessments, mapping modifications, and services of outside consultants. Negotiations with Afognak Joint Venture may require modifications and adjustments to appraisals and parcel evaluations as necessary to reflect changes in parcel boundaries and modifications to property rights being conveyed or discussed. If an agreement is reached, extensive title research will need to be completed and results reviewed, as well as a hazardous materials survey with follow-up site visits prior to closure. While a purchase agreement has been signed with English Bay Corporation, work remains to bring this transaction to closure. The Koniag Phase I final closing is scheduled for FY 98, as well as Akhiok-Kaguyak 4th closing remnants, and the Akhiok-Kaguyak exchange. If Koniag Phase II negotiations become active, mapping, appraisals and other tasks may be necessary.

Additional work on small parcels will focus primarily on those parcels currently identified as actively under consideration. Those requiring the most extensive work are likely to be Termination Pt., the Kenai Natives Association package, and the Kodiak Island Borough tax parcels. Appraisals, appraisal reviews, title research and review, hazardous materials surveys and closing costs are all anticipated. Habitat biologists with the Alaska Department of Fish and Game continue to provide resource information. In addition, the U.S. National Park Service will explore other habitat protection options for park lands impacted by the oil spill.

B. Methods:

The *Habitat Protection and Acquisition Process* is the method for acquiring lands or partial interests in lands that contain habitats linked to resources and/or services injured by the oil spill. Protection tools that will be considered for use by the Trustee Council include: fee acquisition, conservation easements, acquisition of partial interests, cooperative management agreements, and others. Following purchase, acquired parcels will be managed by the appropriate resource agency in a manner that is consistent with the restoration of the affected resources and/or services. The Trustee Council will decide which agency will manage the land or may create a new management authority.

Funds from this project will be used to acquire full title or partial interests in lands, subject to approval by the Trustee Council, that contain habitats/sites linked to resources and services that were injured by the *Exxon Valdez* oil spill. Acquisition of lands or interests in lands will be accomplished according to accepted realty principles and practices. All acquisitions will require title evidence, appraisals of fair market value, litigation reports, hazardous substances surveys, legal review of title, and negotiations. Some acquisitions may require land surveys and additional ecological surveys.

C. Contracts and Other Agency Assistance

Various components of this project will be contracted out to the private sector. Contracting is managed by the agency responsible for acquisition of habitat protection rights and future management. Various agencies handle various realty requirements differently depending upon agency requirements and in house expertise.

SCHEDULE

This project is a continuation of 93064, 94126, 95126, 96126, and 97126, and does not lend itself to a specific timetable. Activities associated with this project are subject to influence from landowners, negotiators and various contractors.

COORDINATION AND INTEGRATION OF RESTORATION EFFORT

All habitat protection efforts including this project are dependent upon the results of on-going research and monitoring projects. For example, the Large Parcel Element used information from the anadromous fish stream catalog, colonial seabird catalog, bald eagle nesting maps, and data from Trustee Council funded studies on black oystercatchers, marbled murrelets and pigeon guillemots.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

There is no substantive change anticipated for FY 98. It is anticipated that the approach to habitat protection acquisitions pursued by the Trustee Council will remain essentially the same. However, it is expected that the bulk of the work associated with the Habitat Protection Program will be completed by the end of this fiscal year.

ENVIRONMENTAL COMPLIANCE

Previous acquisitions have received a categorical exclusions. The appropriate federal agencies, US Dept. of the Interior or US Forest Service will comply with NEPA where appropriate.

PERSONNEL

Project Leaders

Dave Gibbons, Project Leader US Forest Service US Dept. of Agriculture POB 21628 Juneau, AK 99802-1628 (907) 586-8784 FAX (907) 586-7555

Glenn Elison US Fish & Wildlife Service US Dept. of Interior 1011 East Tudor Road Anchorage, AK 99503 (907) 786-3545 FAX (907) 786-3640

Carol Fries, Project Leader AK Dept. of Natural Resources 3601 C Street, Suite 1210 Anchorage, AK 99503 (907) 762-2483 FAX (907) 562-4871

Prepared 7/23/97

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1996 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

	Authorized	Proposed	Dised PROPOSED FFY 1998 TRUSTEE AGENCIES TOTALS					
Budget Category:	FFY 1997	FFY 1998	ADEC	ADF&G	ADNR	USFS	NPS	FWS
				\$16.7	\$287.8	\$205.5	\$13.6	\$257.8
Personnel	\$488.6	\$352.8						
Travel	\$74.6	\$56.0						
Contractual	\$600.0	\$294.3						
Commodities	\$8.2	\$4.7						
Equipment	\$0.0	\$0.0		LONG	RANGE FUNDI	NG REQUIREME	INTS	
Subtotal	\$1,171.4	\$707.8	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$111.2	\$73.6	FFY 1998	FFY 1999	FFY 2000	FFY 2001	FFY 2002	
Project Total	\$1,282.6	\$781.4	TBD	TBD	TBD	TBD	TBD	
Full-time Equivalents (FTE)	10.0	5.7						
			Dollar amount	s are shown in	thousands of d	iollars.		
Other Resources	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
NOTE: This project is a continuation of Project 97126. This budget is based upon the current status of ongoing negotiations as of July 15, 1997. Note: If survey, posting and boundary marking are required for acquired lands additional funding will be requested.								
1998	Project Num Project Title: Lead Agency	ber: 98126 : Habitat Pro y: AK Dept.	tection & Acc of Natural Re	quisition Sup esources	oport			FORM 2A PROJECT DETAIL

Prepared:



1996 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Budget Category:	Authorized	Proposed FEY 1998						
Personnel	\$35.4	\$43.2						
Travel	\$4.5	\$3.7						
Contractual	\$331.6	\$218.6						
Commodities	\$0.5	\$0.5						
Equipment	\$0.0	\$0.0		LONG RA	ANGE FUNDIN	IG REQUIREN	MENTS	
Subtotal	\$372.0	\$266.0	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$24.4	\$21.8	FFY 1999	FFY 2000	FFY 2001			
Project Total	\$396.4	\$287.8						
Full-time Equivalents (FTE)	2.0	0.5		an an taona an taona Taona an taona an taon		and the second		
			Dollar amount	s are shown i	n thousands of	f dollars.		
Other Resources								
						·		
1998 Prepared:	Project Nun Project Title Agency: Af	nber: 98126 :: Habitat Pr (Dept. of N	otection & A atural Reso	Acquisition S urces	Support			FORM 3A AGENCY PROJECT DETAIL

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1996 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

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Per	sonnel Costs:		GS/Range/	Months	Monthly		Proposed
PM	Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
	TBD	Natural Resource Manager II	20	3.0	7,400	0	22.2
	TBD	Natural Resource Manager II	20	3.0	7,000	. 0	21.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
	L						0.0
		Subtotal		6.0	14,400	0	
Tho	se costs associated with pro	ogram management should be indicated by	placement of a	an *.	Per	sonnel Total	\$43.2
Tra	vel Costs:		Ticket	Round	Total	Daily	Proposed
PM	Description		Price	Trips	Days	Per Diem	FFY 1998
							0.0
	Travel to Prince William So	und and Gulf of Alaska for purposes of			10	450	0.0
	survey, title verification, and	d recordation, appraisal review and site	300	4	10	150	2.7
1	inspections.						0.0
	Trevel to Juneou for Truch	- Ocumpil briefinger, presentations				150	0.0
	Travel to Juneau for Truste	e Council bhenings, presentations.	444	1	4	150	1.0
							0.0
							0.0
							0.0
							0.0
Tho	se costs associated with nro	gram management should be indicated by	placement of a	<u>I</u>		Travel Total	\$3.7
							OPM 3P
		Project Number: 98126					
	1998	Project Title: Habitat Protection & A	Acauisition S	Support			rersonnel
		Agency: AK Dept of Natural Reso					& Travel
		Beney: Art Dept. of Matural Nesu	10000				DETAIL

Prepared:

1996 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:			Proposed
Description			FFY 1998
Map Production, m Aircraft charters to	aps and data analysis for negotiators, appraisers, land status verification, data management s uplands to further refine parcel boundaries (24 hours @ \$400.00/hour)	support.	45.0 9.6
Services necessar include, title reports Advertising	y for the Trustee Council to reach closure on purchase agreement for parcels under negotiations, litigation reports, appraisal reviews, timber reviews, hazardous materials assessments.	on. This may	101.0 1.0
Document producti Small Parcel Title I Small Parcel Appra	ion and printing costs. nsurance aisals		2.0 10.0 15.0
Closing and record Hazardous Materia	ation of final title documents, surveys, purchase agreements. Is Review - AJV, Small Parcels		20.0 15.0
When a non-trustee org	anization is used, the form 4A is required.	tractual Total	\$218.6
Commodities Costs:			Proposed
Office and field sup	oplies (toner cartridges, data cassettes, waterproof notebooks)		0.5
	Comm	nodities Total	\$0.5
1998 Prepared:	Project Number: 98126 Project Title: Habitat Protection & Acquisition Support Agency: AK Dept. of Natural Resources	FO Cont Com D	RM 3B ractual & modities ETAIL

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New Equi	oment Purchases:	Number	Uni	t Proposed
Description	י	of Units	Price	FFY 1998
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
1				0.0
				0.0
				0.0
				0.0
				0.0
	bases appreciated with replacement equipment should be indicated by placement of an D	New Equ	inmont Tota	
Evicting E	chases associated with replacement equipment should be indicated by placement of all R.		Numbo	
Description			ofUnit	
	۱ <u>ــــــــــــــــــــــــــــــــــــ</u>			
		×.		
400	Project Number: 98126			FORM 3B
199	Project Title: Habitat Protection & Acquisition Support			Fauinment
	Agency: AK Dent of Natural Resources			
L.				DETAIL
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1996 EXXON VALDEZ TRUSSEE COUNCIL PROJECT BUDGET

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October 1, 1996 - September 30, 1997

Budeet Ostenson	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
Personnel	\$13.0	\$13.0						
Travel	\$2.8	\$1.2						
Contractual	\$0.3	\$0.3						
Commodities	\$0.2	\$0.2	i stationer and the second s					
Equipment	\$0.0	\$0.0	An in the Calmin of the Constant of the	LONG RA	ANGE FUNDI	NG REQUIRE	MENTS	
Subtotal	\$16.3	\$14.7	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$2.0	\$2.0	FFY 1999	FFY 2000	FFY 2001			
Project Total	\$18.3	\$16.7		1			1	
-								
Full-time Equivalents (FTE)	0.2	0.2						
	·		Dollar amoun	ts are shown i	n thousands o	f dollars.	and the second	
Other Resources	<u> </u>				· ·			
								
1996	Project Nun Project Title Agency: Al	nber: 9712 e: Habitat P < Dept. of F	6 rotection & Fish & Game	Acquisition s	Support			FORM 3A AGENCY PROJECT DETAIL

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October 1, 1996 - September 30, 1997

Pers	onnel Costs:	· · ·	GS/Range/	Months	Monthly		Proposed
PM	Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
	TBD	Habitat Biologist III	18	2.0	6,500		13.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
			р. - С С С С С С С С				0.0
		Subtotal		2.0	6,500	0	
Inos	e costs associated with pro	gram management should be indicated by	placement of a	an *.	Per	sonnel lotal	\$13.0
Trav	el Costs:	•	Ticket	Round	Total	Daily	Proposed
PM	Description		Price		Days	Per Diem	FFY 1998
			100				0.0
	Travel to Spill Area Commun	hitles	100	4	4	200	1.2
							0.0
							0.0
							0.0
							0.0
							0.0
				·			0.0
							0.0
							0.0
Thos	e costs associated with prog	gram management should be indicated by	placement of a	un *.		Travel Total	\$1.2
							ORM 3B
		Project Number: 98126					Pornonnol
	1998	Project Title: Habitat Protection & A	Acquisition S	Support		r	
		Agency: AK Dept. of Fish & Game	= · · ·				& Iravel
		·					DETAIL

Prepared:

1996 EXXON VALDEZ TRUSSEE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:			Proposed
Description			FFY 1998
Document reprodu	ction.		0.3
When a non-trustee or	anization is used the form 4A is required	ntractual Total	\$0.3
Commodities Costs			Proposed
Description	<u> </u>		FFY 1998
Office supplies, pa	per, toner cartridges.		0.2
L	Com	modities Total	\$0.2
1998	Project Number: 98126 Project Title: Habitat Protection & Acquisition Support Agency: AK Dept. of Fish & Game	F Col Co	ORM 3B htractual & mmodities DETAIL





	Authorized	Proposed						
Budget Category:	FFY 1997	<u>FFY 1998</u>						
	<u></u>							
Personnei	<u>\$11.8</u>	\$11.8						
	\$2.6	\$0.0						
Contractual	\$8.0	\$0.0						
Commodities	\$0.0	\$0.0						
Equipment	\$0.0	\$0.0			RANGE FUNDIN	IG REQUIREME	NIS	
Subtotal	\$22.4	\$11.8	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$2.3	\$1.8	FFY 1999	FFY 2000	FFY 2001			
Project Total	\$24.7	\$13.6						
Full-time Equivalents (FTE)	0.2	0.2						
			Dollar amoun	ts are shown in	thousands of	dollars.		
Other Resources				<u> </u>				
Comments:						•		
					2			
					,			
							•	
					•			
					·····		1	
								FORM 3A
	Project Num	ber: 98126						
1998	Project Title	Habitat Pro	tection & Ac	auisition Sur	nort			AGENCY
		mt of Into-1-		nguioruori Oup Jarde Camila -	-porc			PROJECT
	Agency: De	pt. of interio	n, ivational F	ark Service				DETAIL
Prepared:							L	
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Dar	concel Costor		CS/Papas/	Manth -	Manshh		Dronoord
DNA	Nome	Position Description	Go/nange/	Pudgeted	Costs	Ourorting.	EEV 1009
PIN		Position Description	Step	Budgeted		Overtime	FFT 1998
		Lands Specialist	13	2.0	5,900		11.8
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
	Subtotal 2.0				5,900	0	
Tho	se costs associated with progr	am management should be indicated by place	ment of an *.		P	ersonnel Total	\$11.8
Trav	vel Costs:		Ticket	Round	Total	Daily	Proposed
PM	Description		Price	Trips	Days	Per Diem	FFY 1998
				5 - C			0.0
							0.0
							0.0
							0.0
1							0.0
							0.0
							0.0
							0.0
							0.0
				· 1			0.0
Tho	se costs associated with progr	am management should be indicated by place	ment of an *.			Travel Total	\$0.0
		r		· · · · · · · · · · · · · · · · · · ·			
							FORM 3B
		Project Number: 98126			Į		Porconnol
	1998	Project Title: Habitat Protection & Ac	quisition Supp	port			
1	1	Agency: Dept. of Interior, National P	ark Service		·		& Iravel
Tho	se costs associated with progr 1998	am management should be indicated by place Project Number: 98126 Project Title: Habitat Protection & Ac Agency: Dept. of Interior, National P	ment of an *. quisition Supp ark Service	port		Travel Total	0.0 0.0 0.0 \$0.0 \$0.0 FORM 3B Personnel & Travel

Prepared:

DETAIL

1996 EXXON VALDEZ TRUSTER COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:			Proposed
Description			FFY 1998
When a non-trustee organizat	ion is used, the form 4A is required.	Contractual Tota	\$0.0
Commodities Costs:			Proposed
Description			FFY 1998
		Commodities Total	\$0.0
1998 Prepared:	Project Number: 98126 Project Title: Habitat Protection & Acquisition Support Agency: Dept. of Interior, National Park Service	F Co Co	ORM 3B ntractual & ommodities DETAIL

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1996 EXXON VALDEZ TRUSTIE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

	-		,	
New Equipment Purchases:		Number	Unit	Proposed
Description		of Units	Price	FFY 1998
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
· ·				0.0
				0.0
				0.0
-				0.0
	۰ 	1		0.0
Those purchases associated w	ith replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
Existing Equipment Usage:			Number	Inventory
Description		· · ·	of Units	Agency
				-
	,			
			<u> </u>	
	Drainet Number, 09196			ORM 2B
1009	Project Number: 90120			
1990	Project Title: Habitat Protection & Acquisition Support			quipment
	Agency: Dept. of Interior, National Park Service			DETAIL
			L	
Prepared:	· · · · · · · · · · · · · · · · · · ·			



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Budget Category:	Authorized FFY 1997	Proposed FFY 1998						
Personnel	\$255.2	\$155.8						
Travel	\$42.2	\$34.4						
Contractual	\$86.1	\$39.9						
Commodities	\$1.5	\$1.5	n sin sin sin sin sin sin sin sin sin si					a di kana kana kana kana kana kana kana kan
Equipment	\$0.0	\$0.0		LONG RA	ANGE FUNDIN	NG REQUIREN	<i>I</i> ENTS	
Subtotal	\$385.0	\$231.6	Estimated	Estimated	Estimated	Estimated	Estimated	1
General Administration	\$44.3	\$26.2	FFY 1999	FFY 2000	FFY 2001			
Project Total	\$429.3	\$257.8			1			
		· · · · · · · · · · · · · · · · · · ·		tana ang tang tang tang tang tang tang t				
Full-time Equivalents (FTE)	5.6	3.1						
······································			Dollar amount	s are shown i	n thousands o	f dollars	ala ditanti cali ana di kana	and a product of the same distance in the
Other Resources							Γ	
Comments.						:		
				~				
1998 Prepared:	Project Nun Project Title Agency: De	nber: 98126 e: Habitat Pr ept. of Interi	6 rotection & / or, Fish & V	Acquisition S Vildlife Servi	Support ice	·		FORM 3A AGENCY PROJECT DETAIL

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1996 EXXON VALDEZ TRUSTIZZ COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

				·				
Per	sonnel Costs:			GS/Range/	Months	Monthly		Proposed
ΡM	Name	Position Description		Step	Budgeted	Costs	Overtime	FFY 1998
						_		0.0
	C. Rasmussen	Review Appraiser		13/7	3.4	5,364		18.2
	S. Schuck	Realty Specialist		12/8	10.2	5,909		60.3
ł	N. Parker	Realty Specialist		9/1	5.1	3,699		18.9
	S. Alexander	Realty Assistant		6/1	10.2	2,721		27.8
[[K. Milton	Carto Tech		8/1	5.1	3,290	ĺ	16.8
Į	G. Meuhlenhardt	Biologist		11/4	2.6	5,321		13.8
								0.0
								0.0
	<u> </u>							0.0
				36.6	26,304	0		
Those costs associated with program management should be indicated by			placement of a	an *.	Per	sonnel Total	\$155.8	
Travel Costs:		Ticket	Round	Total	Daily	Proposed		
PM	Description			Price	Trips	Days	Per Diem	FFY 1998
ľ								0.0
	I ravel to Kodiak			0.36	12	24	0.15	7.9
								0.0
	Kodiak - Charter air sei	rvice to specific tracts		1.5	4			6.0
Kanai Khid and Oslamataf		0.45		ł		0.0		
Kenai - KNA and Salamator		0.15	3			0.5		
						0.0		
		D.C. stan						20.0
								0.0
Tho	I se costs associated with	program management should be	indicated by	placement of a		l	Travel Total	\$34.4
1110			indicated by		411 ·			
<u> </u>							· · · ·	
1								

1998

Project Number: 98126 Project Title: Habitat Protection & Acquisition Support Agency: Dept. of Interior, Fish & Wildlife Service FORM 3B Personnel & Travel DETAIL

Prepared:

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1996 EXXON VALDEZ TRUSCAL COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:		<u></u>	Proposed
Description			FFY 1998
Title Insurance and Survey of approxim Appraisal	related fees. nately 12 10 acre sites		22.4 7.5 10.0
When a non-trustee org	anization is used, the form 4A is required.	Contractual Total	\$39.9
Commodities Costs:			Proposed
			FFY 1998
Office Supplies		r X	1.5
		Commodifies Total	¢1 5
<u>L</u>			o.1 و.
1998	Project Number: 98126 Project Title: Habitat Protection & Acquisition Support Agency: Dept. of Interior, Fish & Wildlife Service	F Co Co	ORM 3B ntractual & mmodities DETAIL

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1996 EXXON VALDEZ TRUSCE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

New Equipment	Purchases:		Number	Unit	Proposed
Description			of Units	Price	FFY 1998
					0.0
					0.0
		· .			0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
Those purchases	associated wit	th replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
Existing Equipm	ent Usage:			Number	Inventory
Description				of Units	Agency
			-		
	9000				[
	1	r		r	
		Project Number: 08126			FORM 3B
1008		Projectivalities in the Data is the O			
1990		Project Little: Habitat Protection & Acquisition Support			quipment
		Agency: Dept. of Interior, Fish & Wildlife Service			DETAIL
Prepared:	1			L	····
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1996 EXXON VALDEZ TRUSTIE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

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	Authorized	Proposed				e na	en and an	
Budget Category:	FFY 1997	FFY 1998						
Personnel	\$173.2	\$129.0						
Travel	\$22.5	\$16.7						
Contractual	\$174.0	\$35.5						
Commodities	\$6.0	\$2.5						
Equipment	\$0.0	\$0.0		LONG RA	NGE FUNDIN	IG REQUIREN	MENTS	
Subtotal	\$375.7	\$183.7	Estimated	Estimated	Estimated	Estimated	Estimated	1
General Administration	\$38.2	\$21.8	FFY 1999	FFY 2000	FFY 2001			
Project Total	\$413.9	\$205.5						
_				and the second sec	and the second second second			
Full-time Equivalents (FTE)	2.0	1.7			and the second second second	and a start with the second start and		
	Dollar amounts are shown in thousands of dollars.							
Other Resources			:					
						·		

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1996 EXXON VALDEZ TRUSTLE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

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Pers	onnel Costs:		GS/Range/	Months	Monthly		Proposed
PM	Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
	D. Gibbons	Lands Specialist	14.0	6.0	8700.0		52.2
							0.0
	R. Goosens	Appraiser	13.0	1.0	6300.0		6.3
	L. Keeler	Lands Specialist	12.0	3.0	5800.0		17.4
	K. Holbrook	Realty/Land parcel specialist	12.0	6.0	5800.0		34.8
							0.0
	J. Swanson	Lands Examiner	9.0	2.0	4500.0		9.0
	R. Schrank	Cadastral Engineer	12.0	1	5800	.	5.8
5							0.0
I	C. Woods	Lands Recorder	6	1.0	3500.0		3.5
	<u> </u>						0.0
<u> </u>		Subtota	!	20.0	40,400	0	
lino	se costs associated with p	rogram management should be indicated by place	ement of an *.		P	ersonnel Total	\$129.0
Trav	vel Costs:		Ticket	Round	Total	Daily	Proposed
PM	Description	**************************************	Price	Trips	Days	Per Diem	FFY 1998
			444.00	_		004.00	0.0
	R Juneau to Anchorage	to meet with review appraisers, contract	444.00	1	21	224.00	7.8
	PT luncou to Machington		2500.00	2	c	224.00	0.0
	RT A poberage to Cordeve		2500.00	2	0	224.00	0.3
	A Anchorage to Coldova		200.00	3	9	224.00	2.0
							0.0
							0.0
							0.0
							0.0
Tho	se costs associated with p	rogram management should be indicated by place	ement of an *.			Travel Total	\$16.7
(insertion)							
							OPM 2P
Project Number: 98126							
	1998 Project Title: Habitat Protection & Acquisition Support						rersonnel
		Agency: Dept. of Agriculture Fores	t Service				& Travel
							DETAIL
Prec	pared:						

1996 EXXON VALDEZ TRUSCE COUNCIL PROJECT BUDGET

October 1, 1996 - September 30, 1997

Contractual Costs:	Proposed
Description	FFY 1998
Title documents, title reports, purchase agreements, hazmat surveys. Air Charters (10 hours @ \$400/hour)	- 10.0 4.0
Title Insurance and closing costs.	10.0
Appraisals (timber, land, minerals)	10.0
Boat costs and fuel (10 days @ \$150/day)	1.5
When a non-trustee organization is used, the form 4A is required. Contractual Total	\$35.5
Commodities Costs:	Proposed
Description	FFY 1998
Office Supplies including paper, toner cartridges, software upgrades, binders, etc.	2.0
Maps	0.5
·	
Commodities Total	\$2.5
1998 Project Number: 98126 F Project Title: Habitat Protection & Acquisition Support Cor Agency: Dept. of Agriculture, Forest Service I	ORM 3B ntractual & mmodities DETAIL

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

New Equipment Purchases		Number	Linit	Proposed
Description		of Units	Price	FFY 1998
	······································			
		,		0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
i nose purchases associated	with replacement equipment should be indicated by placement of an R.	New Equ	upment Total	\$0.0
Existing Equipment Usage:	······································		Number	Inventory
Description			of Units	Agency
		×		
		+		
		1		
		r		
		· · · ·	·····	
		:		
1000	Project Number: 98126			
1990	Project Title: Habitat Protection & Acquisition Support		l İ E	Equipment
	Agency: Dept. of Agriculture, Forest Service			DETAIL
Prepared:				

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1998 EXXON VALDEZ TRUSTLE COUNCIL PROJECT BUDGET

<u> </u>	Authorized	Proposed		PROPOSED	FFY 1998 TRUS	STEE AGENCIE	S TOTALS	
Budget Category:	FFY 1997	FFY 1998	ADEC	ADF&G	ADNR	USFS	NPS	FWS
		Amendment		\$19.0	\$51.0	\$0.0	\$0.0	\$0.0
Personnel		\$15.2						
Travel		\$1.5						
Contractual		\$48.5						
Commodities		\$0.0						
Equipment		\$0.0		LONG	RANGE FUNDI	NG REQUIREME	INTS	
Subtotal		\$65.2	Estimated	Estimated	Estimated	Estimated		
General Administration		\$4.8	FFY 1999	FFY 2000	FFY 2001	FFY 2002		
Project Total	·	\$70.0	\$42.8					
Full-time Equivalents (FTE)		0.3						
Other Besources		\$0.0	<u> </u>	\$0.0	\$0.0	\$0.0	\$0.0	<u>\$0.0</u>
years. Trustee Council support is	also being requ	ested for FY99	as follows:			\$40.0		
,			Contractual			\$40.0		
· · ·			Survey	& Hazmat \$5.0)			
			Planning	g, public proces	SS,			l l
10 TAL 98126.			Best	Interest finding	g \$25.7			
annued august	7011		Airchart	ters \$1.3				
apparent ingen	101.4			appraisai reviev	v \$8.0	۵		
approved December	70.0		TOTAL	rai Auministrati	011	<u> </u>		
*	851.4		IUIAL			¥72.0		
						······································	<u> </u>	
1998	Project Num Project Title	ber: 98126 Habitat Prot	tection & Act	quisition Sup	port		F	ORM 2A PROJECT
Prepared:						:		

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
Personnel		\$0.0						
Travel		\$0.0						
Contractual		\$48.5						
Commodities		\$0.0						
Equipment		\$0.0		LONG I	RANGE FUNDIN	IG REQUIREME	NTS	
Subtotal		\$48.5	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration		\$2.5	FFY 1999	FFY 2000	FFY 2001			
Project Total		\$51.0	\$42.8					
Full-time Equivalents (FTE)		0.0						
			Dollar amount	s are shown in	thousands of a	dollars.		
Other Resources								
effort as exchanges, by state stat Additional travel funds are being budget. This request reflects a m	tute require tha requested for Do nore accurate all	t specific actior epartment of La ocation of fund	ns be taken. w negotiators. s and expenditu	Previously th ires to appropr	ese expenses h iate projects.	ave been absor	bed by the ad	ministrative
1998 Prepared:	Project Num Project Title Agency: Ak	ber: 98126 : Habitat Pro (Dept. of Na	tection & Act atural Resource	quisition Sup ces	oport			FORM 3A AGENCY PROJECT DETAIL

12/18/97

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

Pers	onnel Costs:		GS/Range/	Months	Monthly		Proposed
PM	Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
[[0.0
							0.0
							0.0
							0.0
8							0.0
							0.0
							0.0
	· ·						0.0
		· ·			4		0.0
							0.0
							0.0
		Subtotal		0.0	0	0	
Tho	se costs associated with progr	am management should be indicated by place	ment of an *.		F	Personnel Total	\$0.0
Trav	vel Costs:		Ticket	Round	Total	Daily	Proposed
PM	Description	······································	Price	Trips	Days	Per Diem	FFY 1998
	*						0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
Tho	se costs associated with progr	am management should be indicated by place	ment of an *.			Travel Total	\$0.0
·	· · · · · · · · · · · · · · · · · · ·						
		Brahad bhumhan 00100					FORM 3B
1998 Project Number: 98126 Project Title: Habitat Protection & Acquisition Support						Personnel	
							& Travel
	Agency: AK Dept. of Natural Resources						
L							

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1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET .

Contractual Costs:		Authorized	Proposed
Description		FFY 1997	FFY 1998
Title Research Survey and Hazmat review			10.0
Planning, implementation of p Aircharters	public process, public notice, creation of review documents, Best Interest Finding		5.0
Appraisal			20.0
Title and Appraisal review	•		3.5
RSA with Department of Law	to provide for travel, per diem and other associated expenses for negotiators.		10.0
When a non-trustee organization i	s used, the form 4A is required.	ontractual Total	\$48.5
Commodities Costs:			Proposed
Description			FF 1330
	Cor	nmodities Total	\$0.0
/·····		7	
	Project Number: 98126	F	ORM 3B
1998	Project Title: Habitat Protection & Acquisition Support		mmodifier
	Agency: AK Dept. of Natural Resources		DETAIL

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

New Equipment Pur	chases:	Number	Unit	Proposed
Description		of Units	Price	FFY 1998
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
Those purchases as	sociated with replacement equipment should be indicated by placement of an B.	New F	nuinment Total	<u>\$0.0</u>
Existing Equipment			Number	Inventory
Description			of Units	Agency
			0. 0	
				,
[]			Г	1
	Breiget Number 00126			ORM 3B
1008	Project Number: 38120		F	quipment
1990	Project Title: Habitat Protection & Acquisition Support			
	Agency: AK Dept. of Natural Resources			DEIAL
				L

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
Personnel		\$15.2						
Travel		\$1.5						
Contractual		\$0.0						
Commodities		\$0.0						
Equipment		\$0.0		LONG I	RANGE FUNDIN	IG REQUIREME	NTS	
Subtotal		\$16.7	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration		\$2.3	FFY 1999	FFY 2000	FFY 2001			
Project Total		\$19.0				Ì		
Full-time Equivalents (FTE)		0.3						
			Dollar amoun	ts are shown in	thousands of	dollars.		
Other Resources								
Comments:								
This amendment reflects addition	onal biological inp	ut and travel as	sociated with t	he Afognak acc	quisition.			
- x								
								,
Barrison	ngeres ''''''''''''''''''''''''''''''''''''						1	
[]								FORM 3A
	Project Num	ber: 97126						
1998	Project Title	: Habitat Pro	tection & Ac	auisition Su	oport			
	Agency: Al	C Dept of Fig	sh & Game		- <u>+</u> w			PROJECT
	- All All	C Dept. Of Fis						DETAIL
Prepared:	·	•				·]	



Pers	onnel Costs:	· · · · · · · · · · · · · · · · · · ·	GS/Range/	Months	Monthly		Proposed
PM	Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
1	TBD	Habitat Biologist III	16	2.0	5,100		10.2
							0.0
	TBD	Cartographer	<u> </u>	1.0	5,000		5.0
							0.0
			,				0.0
							0.0
							0.0
							0.0
							0.0
11							0.0
							0.0
	L	L					0.0
		Subtotal		3.0	10,100	0	
Tho	se costs associated with progr	am management should be indicated by place	ment of an *.		F	ersonnel Total	\$15.2
Trav	el Costs:	······································	Ticket	Round	Total	Daily	Proposed
PM	Description		Price	Trips	Days	Per Diem	FFY 1998
				_			0.0
	Travel to Kodiak/Afognak		240	3	4	200	1.5
ļ		•					0.0
							0.0
							0.0
							0.0
					,		0.0
							0.0
Tho	se costs associated with progr	am management should be indicated by place	ment of an *			Travel Total	<u> </u>
1110	se costs associated with progr	ant management should be indicated by place				Traver Total	<u> </u>
						r	
		Project Number: 98126					FORM 3B
1998 Braiaat Titles Habitat Protoction & Acquisition Support							Personnel
Project Title: Habitat Protection & Acquisition S				hour			& Travel
		Agency: AK Dept. of Fish & Game					DETAIL
L							

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

Contractual Costs:			Proposed
Description			FFY 1998
When a non-trustee organ	nization is used, the form 4A is required.	Contractual Total	\$0.0
Commodities Costs:			Proposed
Description			FFY 1998
		Commodities Total	\$0.0
1998	Project Number: 98126 Project Title: Habitat Protection & Acquisition Support Agency: AK Dept. of Fish & Game	l Co Co	ORM 3B ntractual & mmodities DETAIL

1998 EXXON VALDEZ TRUSTLE COUNCIL PROJECT BUDGET

New Equipment Purchase	es:	Number	Unit	Proposed
Description		of Units	Price	FFY 1998
		1		0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
Those purchases associa	ated with replacement equipment should be indicated by placement of an B	New F	uinment Total	<u>\$0.0</u>
Existing Equipment Usag	ie:		Number	
Description	<u>, , , , , , , , , , , , , , , , , , , </u>		of Units	Agency
L				
			[
	Project Number: 98126			FORM 3B
1008			F	auinment
1330	Project little: Habitat Protection & Acquisition Support			DETAIL
	Agency: AK Dept. of Fish & Game			
L			L	

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Tatitlek Coho Salmon Release

Project Number:	98127
Restoration Category:	General Restoration
Proposer:	Tatitlek IRA Council
Lead Trustee Agency:	ADFG
Cooperating Agencies:	None
Alaska SeaLife Center:	No
New or Continued:	Cont'd
Duration:	4th yr. 5 yr. project
Cost FY 98:	
	\$10.5
Cost FY 99:	\$10.7
Cost FY 2000:	\$0.0
Cost FY 01:	\$0.0
Cost FY 02:	\$0.0
Geographic Area:	Prince William Sound
Injured Resource/Service:	Salmon, subsistence

ABSTRACT

This project will create a coho salmon return to Boulder Bay near Tatitlek village. Enough coho eggs to produce 20,000 smolt will be collected from an Alaska Department of Fish and Game approved stream, incubated and reared to smolt at the Solomon Gulch Hatchery, transported, and held for two weeks in net pens in Boulder Bay before release. Release will produce a 2,000 to 3,000 adult return to Boulder Bay for harvest in a subsistence fishery.

A. INTRODUCTION

Subsistence fisheries available to residents of Tatitlek village were severely disrupted by the *Exxon Valdez* oil spill. This project is intended to enhance subsistence resources near Tatitlek by creating a 2,000 to 3,000 coho salmon return to Boulder Bay which is immediately adjacent to Tatitlek village. This resource is intended to partially replace for the near term other subsistence resources, such as harbor seal, that were injured by the spill

This coho salmon return will be created through an annual release of 50,000 coho salmon smolt in Boulder Bay. The smolt are produced at the Solomon Gulch Salmon Hatchery under an agreement between its operator, the Valdez Fisheries Development Corporation and the Tatitlek IRA Council. The coho salmon eggs needed to produce the smolt come from a wild coho run that has been approved by ADF&G for the egg take. The eggs are taken to the Solomon Gulch hatchery for incubation and rearing to the smolt stage. The sea ready smolt are then transported by boat to Boulder Bay and are imprinted to the bay by placing them in net pens for about a two week period before being released into the wild.

This project was approved by the EVOS Trustee Council in FY 95. Funds were appropriated to underwrite the environmental assessment, a draft of which has been produced. Funds received in FY 96 and beyond will be used to produce the coho salmon returns to Boulder Bay.

NEED FOR THE PROJECT

A. Statement of Problem

Subsistence harvests by Tatitlek village residents have declined considerably since the oil spill. Most marine resources that were utilized for subsistence by Tatitlek villagers have not substantially improved since the spill. Subsistence harvests are still a lot less then they were prior to the spill.

B. Rationale/Link to Restoration

This project would enhance the recovery of the local salmon resource that is utilized for subsistence and provide a means for lessening the impacts of continued harvests on other subsistence harvests injured by the spill such as harbor seals.

C. Location

This project will be undertakes at the Solomon Gulch Hatchery and in Boulder Bay near Tatitlek. The benefits will be realized by those participating in the subsistence fishery created by this project. These will mainly be residents from Tatitlek.

1.3533

COMMUNITY INVOLVEMENT

This project was initiated at the request of the Tatitlek Bay IRA Council. The council negotiated the agreement with the Valdez Fisheries Development Corporation to produce the smolt for the project. Members of the village set up the net pen site each year in Boulder Bay and hold and feed the smolt each year prior to release. The villagers participate in the subsistence fishery on the returning adults.

PROJECT DESIGN

A. Objectives

1. Continue agreement with the Valdez Fisheries Development Corporation to produce 50,000 coho salmon smolt for release in Boulder Bay.

2. Imprint smolt to Boulder Bay by holding and feeding them in net pens in the bay for two weeks prior to release into the wild.

3. Harvest for subsistence 2,000 to 3,000 coho salmon annually upon their return to the imprint site.

B. Methods

The purpose of this project is to create a run of coho salmon in Boulder Bay near Tatitlek for subsistence use. The project would be undertaken annually and could be classified as "put and take" since it is unlikely that the coho returns produced by this project would establish a wild run. There are four basic steps to the project; egg take, incubation and rearing to the smolt stage, imprinting and release of smolt and the subsistence harvest.

The Solomon Gulch hatchery is responsible for the egg take and smolt production, Tatitlek village is responsible for imprinting and releasing the smolt into the wild. The subsistence fishery is open to all, but mostly consists of Tatitlek village residents.

The eggs are taken from a coho run approved by ADF&G for use in this project. Enough eggs are taken to produce 50,000 smolt. They are taken to the Solomon Gulch hatchery where standard fish culture practices are utilized to incubate the eggs and rear the resultant fry to the smolt stage. The smolt are then transported by boat to Boulder Bay where they are placed in net pens and held (and fed) for a two week period during which time they imprint to Boulder Bay. The smolt are then released into the wild and proceed to their ocean rearing grounds returning back to Boulder Bay approximately 12 months later as adults. Around 2,000 to 3,000 adult coho salmon return to Boulder Bay from the smolt release. As many of these fish as possible (usually 75% to 85%) are harvested in a subsistence fishery that has been set up specifically for this purpose. The unharvested fish die without spawning.

C. Cooperating Agencies, Contracts and Other Agency Assistance

The Tatitlek IRA Council is contracted by ADF&G to oversee this project. The council in turn contracts with the Valdez Fisheries Development Corporation to take the eggs and produce the smolt.

SCHEDULE

A. Measurable Project Tasks for FY 98

August, 1997	Egg take
May 20 to 25, 1998	Smolt transported to Boulder Bay and placed in net pens.
June 3 to 8, 1998	Smolt released into Boulder Bay
August, 1998	Egg take

B. Project Milestones and Endpoints

Objective 1.	Initial agreement in place. Will be reviewed and renewed by April 15
	each year.
Objective 2.	Completed by June 15 each year.
Objective 3.	Completed by July 15 annually.

C. Completion Date

This project will continue until the subsistence resources injured by the spill have fully recovered.

PUBLICATIONS AND REPORTS

Annual reports	Describe project activities for each fiscal year. Due April 15 following
-	the fiscal year being reported on.
Final report	Synopsis of each year's activities and analysis of project as a whole. Due
-	April 1 following the year in which the final adult return occurs.

PROFESSIONAL CONFERENCES

No travel to professional conferences is planned under this project.

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COORDINATION AND INTEGRATION OF RESTORATION EFFORT

There appear to be no opportunities to coordinate or integrate this project with other restoration efforts.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

There are no project design or schedule changes in this proposal from the DPD approved by the Trustee Council for FY 97.

PROPOSED PRINCIPAL INVESTIGATOR

Gary Kompkoff, President Tatitlek IRA Council Box 171 Tatitlek, AK 99677 Phone (907) 325-2311 Fax (907) 325-2298



FY 98 EXXON VALDEZ TRUSCE COUNCIL PROJECT BUDGET

Budget Category:	Authorized	Proposed FEV 1998						
Budget Category.		1111770						
Personnel	\$0.0	<u> </u>						
	\$0.0	\$0.0						
Contractual	\$11.3	\$2.8						
Commodities	\$0.0	\$0.0						
Fauipment	\$0.0	\$0.0		LONG	RANGE FUNDI	NG REQUIREME	NTS	
Subtotal	\$11.3	\$9.8	Estimated	Estimated	Estimated	Estimated	Estimated	Estimated
General Administration	\$0.8	\$0.7	FFY 1999	FY 2000	FFY 2001	FFY 2002	FFY 2003	FFY 2004
Project Total	\$12.1	\$10.5	\$10.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
110,001 10101		φ. το το	\$,	4010	40.0		4010	
Full-time Equivalents (FTE)		0.0						
			Dollar amour	nts are shown ir	n thousands of	dollars.		
Other Resources								
Comments:	<u></u> ۱		I			1		
					R exx(1	ECEIV (APR 2 8 15) ON VALDEZ QU RUSTEE (COUN	7ED 97 L (SPIL) ICIL	
FY 98 Prepared : 4/8/97	Project Num Project Title: Agency: AK	ber: 98127 Tatitlek Cot Dept. of Fist	no Release h & Game				Primier	FORM 3A AGENCY PROJECT DETAIL d. 4/24/97



FY 98 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

Per	sonnel Costs:		GS/Range/	Months	Monthly		Proposed
PM	Name	Position Description	<u>Step</u>	Budgeted	Costs	Overtime	FFY 1998
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
Į.							0.0
 							0.0
The	a posts associated with proc	Subioidi	placement of (<u> </u>	U	U orconnol Total	\$0.0
Travel Operates				Bound	Total	Daily	
DA	Description		Price	Trips	Dave	Per Diem	FIODOSEC
			11100	11103	Duys		001
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
	<u> </u>						0.0
Tho	se costs associated with prog	gram management should be indicated by	placement of a	an *.		Travel Total	\$0.0_
						FC	ORM 3B
		Project Number: 98127				Pe	ersonnel
	-1 98	Project Title: Tatitlek Coho Release				8	Travel
		Agency: AK Dept. of Fish & Game					
	2 of 8					Printo	



FY 98 EXXON VALDEZ TRUSCOUNCIL PROJECT BUDGET

Contractual Costs:	Proposed
Description	FFY 1998
Contract with Prince William Sound Economic Development Council	9.8
When a non-trustee organization is used, the form 4A is required.	1 \$9.8
Commodities Costs:	Proposed
Description	FFY 1996
Commodities Total	\$0.0
FY 98 Project Number: 98127 Project Title: Tatitlek Coho Release Con Agency: AK Dept. of Fish & Game Printe	ORM 3B htractual & mmodities DETAIL ed: 4/24/97



October 1, 1997 - September 30, 1998

New Equipment Purchases:	Number	Unit	Proposed
Description	of Units	Price	FFY 1998
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.	New Ec	uipment Total	\$0.0
Existing Equipment Usage:		Number	 Inventory
Description		of Units	Agency
		<u></u> _	
Project Number: 98127			JRIVI JD
FY 98 Project Title: Tatitlek Coho Release		Equ	Jipment
Agency: AK Dept. of Fish & Game			DETAIL
4 of 8		Printo	<u></u>
	I	111160	J. 7/24///

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	Authorized	Proposed						
Budget Category:	FFY 1997	FFY 1998						
Personnel	\$2.6	\$2.6						
Travel	\$0.0	\$0.0						
Contractual	\$6.1	\$2.6						
Commodities	\$1.6	\$1.6						
Equipment	\$0.0	\$0.0		· LONC	G RANGE FUND	ING REQUIREM	ENTS	
Subtotal	\$10.3	\$6.8	Estimated	Estimated	Estimated	Estimated	Estimated	Estimated
Indirect	\$1.0	\$3.0	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	FFY 2004
Project Total	\$11.3	\$9.8	\$10.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Full-time Equivalents (FTE)		0.1						
			Dollar amour	nts are shown i	n thousands of	dollars.		
Other Resources								
Comments:								
	Project Num	1ber: 98127						
FY 98	Project Title:	Tatitlek Co	ho Release					on-Irustee
	Name: Tatit	lek IRA Cou	ncil					DETAIL

Prepared: 4/7/97

5 of 8

Printed: 4/24/



FY 98 EXXON VALDEZ TRUS COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Personnel Costs:				Months	Monthly		Proposed
Name	Position Description			Budgeted	Costs	Overtime	FFY 1998
	Net Pen Worker			0.5	\$2,500		1.3
	Net Pen Worker			0.5	\$2,500		1.3
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
							0.0
	I						0.0
		Subtotal		1.0	5,000	0	
				=	<u>Pe</u>	ersonnel Total	\$2.6
Travel Costs:			Ticket	Round	Total	Daily	Proposed
Description			Price		Days	Per Diem	FFY 1998
							0.0
							0.0
							0.0
			1		1		0.0
							0.0
							0.0
							0.0
			1				0.0
							0.0
							0.0
							0.0
						Travel Total	\$0.0
		<u>-</u>					
	Project Number: 98127						
FY 98	Project Title: Tatitlek Coh	o Release				I P€	ersonnel
						8	Travel

& Travel

DETAIL

6 of 8

Name: Tatitlek IRA Council



FY 98 EXXON VALDEZ TRUSCE COUNCIL PROJECT BUDGET

Contractual Costs:		Proposec
Description		FFY 1998
Transport 20,000 coho smolt to Boulder Bay village skiff rental		2.0 0. <i>6</i>
	Contractual Total	\$2.6
Commodities Costs:		Proposed
Description		FFY 1998
Skiff fuel/oil Misc. supplies		0.2
	Commodities Total	\$1.6
Project Number: 98127 Project Title: Tatitlek Coho Release Name: Tatitlek IRA Council	FO Contr Com	RM 4B actual & modities
7 of 8		ETAIL : 4/24/97



New Equipment Purchases:	Number	Unit	Proposed
Description	of Units	Price	FFY 1998
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
Those purchases associated with replacement equipment should be indicated by placement of an R.	New Ec	upment Iotal	\$0.0
Existing Equipment Usage:		Number	
Description		of Units	
Project Number: 98127		FC	DRM 4B
FY Q8		Equ	Jipment
			DETAIL
		F 4.	
Name: Tafiflek IRA Council			

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Rensed 6/25/97 approved 12/18/97

Chugach Native Region Clam Restoration

Project Number:	98131	
Restoration Category:	General Restoration	
Proposer:	P. Brown- Schwalenberg/ CRRC	
Lead Trustee Agency:	ADFG	
Cooperating Agencies:	None	
Alaska SeaLife Center:	No	
New or Continued:	Cont'd	
Duration:	4th yr. 5 yr. project	
Cost FY 98:	\$290.1	
Cost FY 99:		
Cost FY 2000:		
Cost FY 01:		
Cost FY 02:		
Geographic Area:	Prince William Sound, lower Cook Inlet	
Injured Resource/Service:	Clams, subsistence	

ABSTRACT

Cost effective procedures for establishing safe, easily accessible subsistence clam populations near Native villages in the oil spill region will be established. The Qutekcak hatchery in Seward will annually provide about 800,000 juvenile littleneck clams and cockles. Historical information, local and agency expertise, and research will be used to identify areas to seed and what method to use. Total seeded area during the project will not exceed five hectares. Follow-up research on success of seeding will be conducted. Development work will be confined to areas near the Native villages of Eyak, Tatitlek, Nanwalek, and Port Graham.

INTRODUCTION

A. General

The purpose of this project is to develop cost effective procedures for establishing managed populations of clams in areas that are readily accessible from Native villages in the oil spill region. These clams will be used as a source for subsistence food to replace the natural clam resource that has been lost, damaged or depleted. The villages of Port Graham, Nanwalek, Tatitlek and Eyak will take part in the development process.

Clams were once an important subsistence food in the Native villages. Clam populations in areas that are reasonably accessible to the villages have decreased to very low levels in recent years. Consequently, the role of clams in the subsistence diet in these villages has been greatly reduced. And, with a few exceptions, the role of clams in the subsistence diet of most Native villages in the oil spill area is a lot less than it was historically.

There are probably a number of reasons why local clam populations are currently at low levels. Since clams are basically an unmanaged resource in the oil spill area, there are no quantifiable data available that could point to the actual circumstances that lead to the sharp reduction in these clam populations. However, there are events that likely played a major role. These include changes in beach configurations resulting from the 1964 earthquake, increasingly heavy sea otter predation, human over-harvest, and the *Exxon Valdez* oil spill.

The oil spill impacted the wild clam populations and their importance as a subsistence food in two ways. First, many clam beds suffered from direct oiling. The impact of the oil on the clam beds in Windy Bay, for instance, destroyed one of the more important clam beds in the lower Kenai Peninsula. With the current timber harvesting operations soon to provide road access from Port Graham and Nanwalek to the Windy Bay area, the loss of the clam resource there had a major impact on these villages. Second, even though many clams weren't killed from the oil, they have a tendency to accumulate and concentrate the toxic contaminants from non-lethal amounts of oil. This has badly eroded the confidence of the villagers in the healthfulness of the remaining wild clam populations as a subsistence food.

In order to re-establish local clam populations as a subsistence resource for the Native villages a program needs to be developed to enhance the depleted stocks and the replace damaged ones. Over the past ten years the nursery systems and field growout technologies have sufficiently evolved to make clam enhancement and reseeding efforts feasible. This technology can be readily applied to increasing the clam resource near the villages to determine which applications would be best suited for the task at hand.

This program was initiated in FY 95 as a demonstration project. The first year objectives were to decide what species of clams will be used for the project, determine the potential of the Qutekcak Shellfish Hatchery to produce seed for the project and develop the system for identifying the growout areas near the villages of Port Graham/Nanwalek and Tatitlek.

After consultation with the Native villagers, experts in clam production techniques and a literature search, littleneck clams (*Protothaca staminea*) and cockles (*Clinocardium nuttalli*)

were selected as the species that will be used in the restoration effort. The butter clam *(Saxidomus giganteus)*, a popular species with the Native villagers, was rejected because of its slow growth characteristics and propensity to retain the Paralytic Shellfish Poison toxin for extended periods.

Littleneck clam broodsource for both Port Graham/Nanwalek and Tatitlek have been cleared for use in the Qutekcak Shellfish Hatchery in Seward. A Nanwalek/Port Graham source of cockle broodstock has also been cleared for hatchery use, but the state fish pathologist is withholding clearance for a Tatitlek cockle broodstock pending further analysis.

As part of the study to identify growout areas near the villages a literature search was conducted through the University of Alaska to identify all previous research on littleneck clam life histories and population surveys. Time was spent with Alaska Department of Fish & Game (ADF&G) shellfish biologists from lower Cook Inlet and Prince William Sound to review and discuss clam surveys and management plans. Residents of the villages of Port Graham, Nanwalek and Tatitlek were interviewed to identify nearby areas that either now or once had significant populations of littleneck clams. Beach surveys were then conducted near Port Graham, Nanwalek and Tatitlek. Several sites were identified as suitable for use in this project.

The hatchery produced several small batches of littleneck clam seed. However, survival through metamorphosis was poor. An experienced shellfish hatchery manager (see attached resume) was brought into the hatchery to ensure that the proper culture procedures were in place and to improve larval health and survival. He will remain on staff for at least the duration of the project. There appears to be a seawater quality problem in the hatchery. Whether this is caused by something unique to this facility, i.e. the plumbing system, or something the local water supply is uncertain. A heavy-duty activated carbon filtering system has been installed which seems to be clearing the problem up.

Dr. Ken Brooks of Aquatic Environmental Sciences in Washington State has been contracted to develop the protocols for the hatchery/nursery production of cockles. A tidally driven fluidized upwelling nursery system (tidal FLUPSY) was set up near Tatitlek to test its potential for nursery production. Test plots on beaches near Tatitlek, Nanwalek and Port Graham have been seeded with littleneck clams for growth, mortality and predator control studies, and predator control coverings will be tested on razor clam beaches near Eyak. Initial beach surveys were conducted on beaches near the villages of Chenega Bay in Prince William Sound and Ouzinkie on Kodiak Island.

The project anticipates moving into the new hatchery facility now being built by the state sometime in July, 1997. The hatchery will be leased and operated by the Qutekcak Native Tribe who will contract with the project to conduct the hatchery and nursery work. This new facility will greatly enhance operations and allow the project to increase production as well as expand into cockles. The increased algae production capabilities in the new facility will, in addition to permitting increased seed production, allow the project to expand investigations on pre- nursery production at the hatchery.

The first order of business upon moving into the new hatchery facility will be to ensure that the quality of the process seawater meets or exceeds hatchery standards. The next order of business

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will be to equip the hatchery and bring it on line. It should take 30 to 45 days to complete this work.

In FY 98 the project scope will be narrowed to focus on improving hatchery production to the point that seed growth and survival meets shellfish hatchery standards. All hatchery work under this project in FY 98 will be restricted to littleneck clams. Work on the growout phase in FY 98 will concentrate on collecting and analyzing data to determine growth and mortality of littleneck clams planted in FY 96 and FY 97.

Hatchery seed produced in FY 98 will be used to continue work on bringing hatchery nursery production up to acceptable standards and to continue studies on remote nursery production using the tidal FLUPSY. Nursery seed produced by both the hatchery and the tidal FLUPSY will be planted on project beaches in order to maintain the development schedule for creating subsistence clam beaches.

The razor clams predator control studies will be curtailed in FY 98.

Since its inception the project has been contacted by other villages about having beaches near them included in the project. The four villages (Tatitlek, Eyak, Nanwalek and Port Graham) that are currently involved in the various beach studies offer enough variety to accommodate all facets of the development phase. Including additional villages at this time would only detract from the project by spreading the limited resources over a larger geographic area.

In FY 96 a policy was put in place to accommodate additional villages that want to join the project. This involved conducting a baseline tidelands survey near each interested village to determine the extent of existing shellfish resources and the potential for enhancement. In FY 96 the villages of Chenega Bay and Ouzinkie had baseline surveys conducted. No further baseline surveys will be conducted under this project until the actual clam enhancement procedures that could be used to develop subsistence clam beds are better defined.

Because very little culture or enhancement work has been done previously with littleneck clams or cockles, this project is breaking a lot of new ground. This is perhaps good news from the standpoint of contributing to the knowledge pool, but it is slowing the project down. The hatchery, nursery and growout procedures that are being developed for this project must be adapted from previous work on other species. The growout work will first require the development of a database on growth and mortality for both species to help determine the best enhancement approach.

The progress that the project has experienced so far gives the investigators great confidence that successful hatchery, nursery and growout procedures will be developed. This knowledge can then be put to work in providing safe, reliable subsistence clam resources for the villages in the oil spill region.

There are other funding sources, in addition the EVOS Trustee Council, that are contributing to this project.

B. Funding

In addition to funds requested from the EVOS Trustee Council there are several other bivalve shellfish projects ongoing in the Chugach Native region that will contribute to the implementation of this project in FY 97. Although none of these projects is directly involved in subsistence clam development, some of the hatchery and nursery objectives are the same. Shared objectives translate into shared funding, which reduces the overall cost of the subsistence clam project. The table below describes the projects that will contribute to the EVOS TC clam project in FY 98 with a brief description of how these projects will contribute and estimated amount.

Funding Source	Recipient/Purpose	Shared Objectives	Est.
		۰ ۱	Amount
Administration for	Qutekcak Native Tribe/	Shellfish hatchery	\$130.0
Native Americans	hatchery development	operations & administration	
Saltonstall/Kennedy	Qutekcak Native Tribe/ commercial rock scallop development	Shellfish hatchery operations	\$25.0
Dept. of Community & Regional Affairs (AK)	Village of Chenega Bay/ oyster farm development	Nursery production with powered FLUPSY	\$35.0
Dept. of Community & Regional Affairs (AK)	Village of Tatitlek/ shellfish mariculture	Operation of tidal powered FLUPSY	\$25.0
Bureau of Indian Affairs	Chugach Regional Resources Commission/ mariculture development	Shellfish hatchery operations	\$25.0
	-	Total	\$ 240.0

Once the objectives of this project have been met, and the hatchery is in commercial production, funding for the continued maintenance of the subsistence clam beds will come from the shellfish hatchery and the participating Native villages. Seed for the subsistence clam beds would be produced by the Qutekcak hatchery. Hatchery seed production for subsistence use would be a small piece of the anticipated commercial hatchery production and would not require additional funding.

Maintenance of the subsistence beaches, once they are set up, would be the responsibility of the respective villages. Maintenance costs would be small except for labor. All the participating villages also have commercial fisheries development projects. The labor costs for subsistence clam beach maintenance could easily be covered under these projects.

NEED FOR THE PROJECT

A. Statement of Problem

Local shellfish populations, especially clams have been severely reduced as a subsistence food source for Native villages. Part of the reduced use is a loss of confidence in the safety of consuming shellfish as a result of the Exxon Valdez Oil Spill. In addition, local shellfish populations have been greatly reduced as result of hydrocarbon toxicity, sea otter predation, human overharvest and beach changes from the 1964 earthquake.

B. Rationale

This project will accomplish two things. One, it will help restore the clam resource base in the oil spill area, and two, it will enhance subsistence gathering by providing a safe, easily accessible source of clams for subsistence use.

C. Location

The hatchery and pre-nursery work will be carried out at the Qutekcak Shellfish Hatchery in Seward. Growout operations and sampling will occur in the area around the villages of Tatitlek and Eyak in Prince William Sound and in the Port Graham/Nanwalek area in Lower Cook Inlet. Pathology work will be conducted in Anchorage and Juneau. PSP sampling will occur at the DEC lab in Palmer. Data Analysis and project oversight will be conducted from CRRC offices in Anchorage and Moose Pass.

COMMUNITY INVOLVEMENT

The communities named in this project will be directly involved in it. Each community decided whether or not it wanted to be involved in the project initially. Local residents will be heavily relied upon to help locate existing clam populations and the areas for reseeding. Project work involving the villages will be done with local labor. Community leaders will be kept appraised of how the project is progressing.

PROJECT DESIGN

A. Objectives

- 1. Hatchery Processes- Develop reliable, cost effective hatchery techniques for the littleneck clam (*Protothaca staminea*). Produce a 5mm seed in the hatchery within 19 weeks after spawning.
- 2. Nursery- Develop cost effective, reliable techniques to grow 5mm hatchery seed to an outplanting size of 10mm - 15mm within 12 weeks.

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- 3. Growout Describe current local clam populations through interviews and resource assessments. Locate sites, develop reliable, cost effective growout techniques, and evaluate the efficacy of proposed methods. Develop permanent subsistence beaches.
- 4. Management Plan In concert with appropriate state resource management agencies and in compliance with policies and regulations of the Alaska Board of Fisheries, develop a management plan for the subsistence beaches. The plan will be designed to ensure the orderly harvest and long term viability of these beaches and that the clams from these beaches are safe for consumption.

B. Methods

The following is an outline of the methods that will be applied to accomplish each objective. In the pursuit of all the objectives the principal investigators will rely heavily on the advice and assistance of experts in the field. The technology for hard clam aquaculture on both the east and west coasts of the U. S. and Canada has been advancing rapidly in recent years. In order to keep abreast of the developments, determine which ones would be best suited for adapting to Alaska and avoid repeating mistakes that others have made, it will be necessary to keep in contact with the leaders of this technological advance.

For the hatchery, nursery and growout objectives, experts will be brought in to set up production or testing programs and train hatchery staff or Native villagers in clam production and/or enhancement techniques. In all cases project investigators will keep abreast of the literature and in contact with experts in the various disciplines that make up this project.

OBJECTIVE 1. HATCHERY

The Qutekcak Shellfish Hatchery located on the Institute of Marine Science grounds in Seward has been in operation since October 1993. During this time the hatchery was designed and assembled and has evolved into a small pilot-scale operation. The staff has successfully set larvae of the pacific oyster (*Crossastrea gigas*) and raised them to 15 mm for the aquatic farm industry. In addition, the hatchery has successfully conditioned, spawned, set and raised the native littleneck (*Protothaca staminea*) to 10mm.

Although a great deal had been accomplished at the hatchery, operations and procedures needed to become more reliable and efficient for the hatchery program to succeed over the long term. Total survival and production were low. To address this problem an experienced shellfish culturist with twelve years of practical hatchery experience was brought on as hatchery manager (see attached resume). He will remain on staff for the duration of this project at least and will be responsible for developing operational procedures and policies, finishing and equipping the new hatchery, training staff and making hatchery operations more successful and efficient.

In FY 96 and FY 97 extensive larval deformity and mortality in littleneck clams and oysters, plus inconsistent algal growth despite many quality controls, were experienced. In addition a large percentage of broodstock clams also failed to undergo gametogenesis. It was thought that these problems could be caused by poor seawater quality and water analyses were conducted to try to determine the cause. Histology work was also conducted on the broodstock and larvae. In

addition, several tests in treating the seawater were conducted to see if spawning losses could be alleviated or reduced.

The testing and histology work is still ongoing. It appears however, that an extensive activated carbon filtering system will greatly reduce, spawning losses. A rudimentary carbon filtering system has been installed in the existing hatchery. Development and survival from the last two littleneck clam spawns have been satisfactory. If the new hatchery also the same seawater problems an extensive carbon filtering system will be installed there. In addition, a comprehensive health management program for the hatchery was begun in FY97 on a small scale and will be expanded in FY98. The core of the program involves the services of two certified shellfish histopathologists and one or more seawater testing laboratories. This program will be used to improve broodstock, larval, and algal culture production and to isolate any potential toxins or other problems with the seawater.

The present small facility was intended to operate for a limited period of time until a new and permanent hatchery could be built. Construction on the new facility began in April, 1996 with a now anticipated completion date of early May, 1997. The new facility will be owned by the state and leased to the Qutekcak Native Tribe. It is anticipated that the project will move into the new facility as soon as it is ready for occupancy.

With the new facility online littleneck seed production can be increased. In FY 98 the hatchery will work with only littleneck clams under this project. The littleneck clam seed production goal for FY 98 is a minimum of 500,000. A set of standard procedures will be adopted for the production of hatchery seed.

Hatchery rearing of bivalves follows three or four principal stages common to most species. Specific variations in the procedures apply to each species and strains adapted to Alaska's cold water. Some variations in procedures and practices also arise due to specific differences in the local environment of a hatchery and to the technology available to a hatchery. The following descriptions are a synopsis of the successful procedures for the production of Littleneck clam spat (juveniles) developed at the Qutekcak shellfish hatchery during the last several years. It includes how these procedures will be applied on a larger scale (150 fold) in the new hatchery, and what areas may need further investigation when applied to the new facility. Different facilities have almost always performed somewhat uniquely in the experience of most hatchery operators.

Broodstock Conditioning and Development

Beginning in January six hundred brood clams will start an eight to twelve week period of conditioning (ripening) at 9-10 C. Four successive groups of three hundred additional brood clams will begin conditioning every three weeks. Spawning can then commence in April and continue through July, as needed, which also takes advantage of their natural spawning cycle to maximize fecundity and gamete quality. Broodstock are maintained in 1000 or 3000 liter indoor conditioning tanks receiving a slow continuous ambient seawater flow for dilution and temperature control, and are drained and cleaned every other day. During this period the brood clams will be fed a diet of six species of microalgae rich in essential lipids and sterols such as eicosopentanoic, docosohexanoic, and arachidonic acids to impart maximum reserves to the eggs. The six species are *Pavlova (ccmp459)*,

Tetraselmis striata, Tahitian Isochrysis sp. (tIso), Thalassiosira pseudonana (3H), and Chaetoceros calcitrans (Ccal), and a cold water diatom Thalassiosira gravida, isolated from our seawater pond. Phytoflagellates are fed at a two to one ratio to diatoms to the conditioning tanks at a continuous cell density of about 100,000 cells per ml.

This protocol has repeatedly yielded well-ripened adults that mass spawn three to five million eggs per female. Lowering the conditioning temperatures to below 10 C rapidly solved our prior problem where half of the brood clams failed to undergo gametogenesis (females) or spawn (males). These same brood clams began spontaneous spawning at 10.5 C within one month after lowering the conditioning temperature to 10 C. We spawned them twice more in mid-winter (normally an inactive period) and during these controlled spawns the embryos developed normally to D-veliger larvae unlike the previous summer. Additional clam brood from Port Graham placed in conditioning in mid-March 1997 underwent rapid, normal gametogenesis as well. Starting from a completely spent gonadal state we have been able to spawn sub-groups these additional clams as necessary after only eight weeks. The embryos from these controlled spawns have developed to normal D-veligers as well and have not subsequently grown deformed.

Any F1 generation clam families exhibiting unusually rapid growth in the spill area beaches such as those planted in June 1996 will be used as a broodstock source for future strain propagation and development. These adult clams will also often produce larvae that perform better under hatchery rearing conditions.

2. Spawning and Larval Rearing

Two spawning methods will be tested in the new hatchery to determine the most successful. One will be uncontrolled mass spawning of 100 brood clams in a 30,000 liter rearing tank (as commonly practiced in Pacific Northwest hatcheries). The other will be an induced, controlled spawn of 100 to 200 clams using a 600 liter spawning tank, individual containers, and carefully controlled fertilization. The former method is simple and very labor saving when successful while the latter method requires more time and labor but has worked well in our pilot hatchery. The latter method may also avoid stimulating initially high levels of pathogens during the first 48 hours development to D-veliger by eliminating the build-up and decomposition of excess sperm. Early development can also be reliably observed with this method to gauge overall health and viability by observing and measuring the condition of gametes and by monitoring the percent normal development rate during the first few cell divisions.

After fertilization the clam embryos are transferred to the 30,000 liter larval rearing tanks filled with 1μ filtered, UV-irradiated seawater at 16 C for the next 48 hours. One micron filtration has proven necessary to remove the fine glacial flour seasonally present in our waters. Initial densities will not exceed ten embryos per milliliter (ml). During the 48 hour period of development from egg to D veliger larva is where we have experienced persistent high rates of abnormal development for multiple species during some periods of the year. If extensive abnormal development recurs an additional seawater treatment step consisting of at least 45 minutes of percolation through a bed of granular activated carbon (GAC) will be incorporated. This treatment has improved seawater quality sufficiently

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enough to reduce the rate of abnormality. Lowering the broodstock conditioning temperature has substantially reduced the problem of abnormal development. Supplementation of essential metals such as strontium, magnesium, and calcium may also be used during periods of surface water downwelling (induced by sustained, strong southerly winds) combined with high flow rates from a nearby stream. Prior IMS research revealed nutrient depletion down to their 70 m intake depth during periods of downwelling and our own water analysis found a depleted selenium concentration. Sustained downwelling weather conditions occur very infrequently based on our present experience with the IMS seawater system whose intake now sits on the sea floor after many years of sedimentation.

On day two the larvae tanks are gently drained onto an immersed 38 micron screen and the new D-veligers are washed repeatedly, measured and counted, and returned to another filled larval rearing tank at a density of one per ml. Littleneck clam larvae have proven sensitive to usual rearing densities and handling. Because of this on each successive water change, which will be every three days rather than two, the density will be gradually lowered until about 0.25 larva per ml is reached on day eleven or fourteen. On day eight the larvae tanks are drained on a 54 micron screen. A 68 micron screen is used on day 14, and a 75 micron screen on day 20. Pediveligers are removed with a 120 micron screen. The littleneck clam larval cycle has consistently required around 30 days at 16 C at which point 200 μ pediveligers are screened off and placed in a setting system.

Each day the following data are collected for each larvae tank: temperatures, observations of larval health, activity, and feeding, algal cell density and specific ratios (measurements are taken several times to monitor clearance and maintain food cell density), and total *Vibrio* bacterial levels by TCBS plating. Initially the clam larvae are fed a 3:1 phytoflagellate to diatom ration of 50,000 cells/ml of *Pavlova*, *tIso*, *Ccal*, and *3H*. Each of these species is small enough to be ingested by the D veliger. The ration is maintained at 80,000 cells/ml after day 14 by which time the phytoflagellate to diatom ratio has gradually dropped to 1:1. *Tetraselmis striata*, another particularly nutritious but larger species, is also incorporated into the diet at that time.

Since March 1997 this larval rearing protocol has twice yielded modest but increasing numbers of healthy clam pediveligers that were placed into a setting system. The first larval group produced 50,000 pediveligers from an initial 1.2 million D-veligers (4.2 %) and the second group produced 105,000 pediveligers from an initial 1.4 million D veligers (7.5 %). To put this in perspective typical hatchery yields from D veliger to pediveliger is highly variable with a median of about 40 % depending on how intensively a hatchery tries to rear the larvae and how aggressively they cull out the slow growing proportion.

We know that a certain proportion of our lowered yields was due to pathogenicallybacterized algae cultures and higher than optimum larval densities. To determine the cause of larval mortalities experienced in the hatchery, we have and will continue to collect samples during periods of mortality of both live and freshly dead larvae for histopathological examination by Dr. Ralph Elston of AquaTechnics, Inc. Dr. Elston, a certified shellfish pathologist, has extensive experience serving the Pacific Northwest shellfish industry. Some results to date of his examination of Washington state oyster

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larvae soon dying after being transferred to our hatchery revealed infections with mantle invasive bacteria. He also found "advancing fronts of necrotic host cells suggesting the presence of a bacterial exotoxin." He recommends that bacterial management of the systems be addressed by investigating the usual sources of bacterial contamination and amplification, including stock and expanded algal cultures. We will implement his recommended bacterial management using testing media described in his book on shellfish diseases and his specific advice during an upcoming trip to our hatchery. Additional steps being taken to avoid growing or feeding pathogenically contaminated microalgae are described below under microalgae production. If after effective bacterial management within the new facility substantial larval mortality persists we will conduct an EPAdeveloped Toxicity Identification Evaluation (TIE). We are still investigating this procedure and seeking someone familiar with its use.

We are presently rearing a third clam larvae group with three more former algae tanks converted to larvae culture for rearing an initial 3.1 million D veliger larvae. We expect at least ten percent of these to reach the pediveliger stage barring any sudden water quality change. At our present rates of larval rearing success the 150 fold increase in larval rearing volume in the new hatchery will permit an initial 120 million D veligers to be reared per spawn group for a yield of 9 million pediveligers into setting. As described in the following section on setting and spat rearing this should yield at least 4 to 5 million clam spat; five times as many as required for planting on the three village beaches (800,000 spat).

Larval Metamorphosis (Setting) and Spat Rearing

Clam pediveligers are placed into gentle downwelling setting systems at one million pediveligers per 4 cu. ft., screened tray and three trays per 600 liter partially recirculating tank. The same airlift-driven setting systems have proven themselves versatile and efficient at a number of other hatcheries. Temperatures, diet and ration remain the same as during larval rearing. Systems are drained and cleaned every other day. Temperature, larval health and feeding, and percent metamorphosed are monitored daily. The larvae complete the complicated metamorphic process on the surface of the tray screen and retain their larval foot and their ability to secrete byssal threads. Our first group of clam pediveligers required over a month to fully complete metamorphosis suggesting the probable role of a natural compound inducing metamorphosis. Various catechol compounds serving as neurotransmitters have been successfully used to induce metamorphosis in other bivalve species and are being tested on the Littleneck clam larvae to rapidly induce and synchronize metamorphosis. The induction compound and method must not, however, increase the low setting mortality presently experienced in our hatchery. About 80 % of the clam pediveligers in our first group have survived metamorphosis without any induction and now measure between 0.5 to 2 mm in length. Twenty five to fifty percent survivals through metamorphosis are more common for the Manila clam at other hatcheries.

Our second group of clam pediveligers is still undergoing metamorphosis and preliminary observations suggest that most of these have now metamorphosed with at least 50 % survival. The spat (as they are now called after metamorphosis) are not counted by

volumetric and gravimetric methods until they have reached 3 mm in length to avoid crushing thin shells and triggering ongoing mortality.

Once clam spat have grown to 1mm and are firmly byssing themselves to the screen surface, the water flow is reversed to an upwelling flow through the trays to better monitor flow rate and to better assure even feeding and oxygenation of the mat of spat on the screen surface. Later the upweller water temperature is dropped in steps to 12 C to prepare the expanding volumes of spat for transfer to outdoor upwelling systems plumbed to the one million liter seawater pond. The spat are transferred in the spring to this outdoor prenursery at 2mm in size where much greater quantities of natural food can be grown to support their exponentially increasing appetites and to acclimate them to more natural conditions. Pond seawater will be pumped through the trays of 2 mm spat at about 10 to 15 gpm and at higher flow rates as the spat grow to 3 to 5 mm in size. At this point they are ready for transfer to either the hatchery pre-nursery or a field nursery for the next stage of growth.

4. Microalgae Culture

Both batch and semi-continuous culture methods of microalgae culture will be used in the new hatchery. All microalgae cultures originate from axenic flask cultures of the seven species we use: Pavlova sp. (ccmp459), Tetraselmis striata, Tahitian Isochrysis sp. (tIso), Thalassiosira pseudonana (3H), and Chaetoceros calcitrans(Ccal), and two cold water strains of the diatoms Thalassiosira gravida and Skeletonema costatum isolated from our seawater pond. Stock cultures are regularly restarted using sterile technique in a transfer cabinet. Sterility for every transfer is verified by testing for bacterial growth in tubes of Guillard's sterility test medium. A number of other quality control steps were outlined in the 1996 EVOS report. Four day old flasks are used to inoculate larger batch cultures such as carboys or 200 liter tubes which in turn are used to inoculate the much larger tank batch cultures. The seawater for flask and carboy scale culture is one micron filtered, UV irradiated, and percolated through activated carbon for 40 minutes. Flasks are autoclaved and carboys are chlorinated overnight at 8 ppm then de-chlorinated prior to use. In the new hatchery microalgae will also be cultured in more efficient semi-continuous, 600 liter, bag cultures. Seawater will be pasteurized and nutrified before flowing into the bag cultures. All aeration of the above mentioned cultures is sterile filtered at 0.2 microns. Guillard's L1 nutrient medium (an enhanced F/2) is used to nutrify all cultures. The solutions are prepared from dry compounds in distilled freshwater and kept refrigerated.

Seawater for large tank batch cultures receives the same treatment described above for hatchery microalgae culture. The only differences are that the activated carbon treatment is omitted and the air is not sterile filtered. These larger open cultures are fed only to larger spat and brood clams. They are plated on TCBS medium for pathogen levels at less regular intervals than the carboys and bags.

Great care is now taken in choosing which cultures to feed to larvae. The additional precautions are necessary to avoid as much as possible the feeding of a pathogenically bacterized algae culture to larvae. Our routine procedure requires that the culture had been TCBS plated one or two days earlier with no colonies present, that the algae culture not exhibit any clumping, degradation, or contamination with other organisms when examined

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under the microscope, and that it smells "good". Odor can regularly reveal a pathogenically bacterized culture that TCBS medium and visual examination miss. These three steps have helped improve the health and survival of the larval to the modest levels we now achieve, however, more has to be done to virtually eliminate bacterial contamination as a source of larval mortality. In pursuit of that goal, a procedure has been established to take samples along the entire hatchery process. Dr. Don Button at UAF will analyze these samples in order to gain an understanding of the various microbial dynamics of the hatchery operations. Dr. Button has researched microbial ecology for years and has developed sophisticated instrumentation for DNA, biomass, and size structure analysis of small samples. This sampling will serve as a preliminary investigation for more extensive research into the microbial dynamics of the hatchery and local seawater as influenced by the nearby seafood processing plant among other factors. Efforts by Dr. Button and our hatchery to secure grant funding is under way. The hatchery's health management funds will help match grant money.

OBJECTIVE 2. NURSERY SYSTEM

A. Seawater Pond Pre-Nursery

The QSH utilizes a 1 million liter pond to culture algae for its pre-nursery. The 30m by 37m pond is 5 meters at its deepest point. Raw seawater from a 60 meter deep intake is pumped into the pond to bring in nutrient rich water. The flow can be controlled to allow for adequate flushing yet maintain the ambient air temperature. An air compressor is used to aerate and circulate water in the pond to eliminate stratification and increase phytoplankton production. Fertilizer solutions are added daily to increase the intensity and duration of phytoplankton blooms. Physical parameters of the seawater including temperature, salinity, pH, and redox potential are monitored and water samples are collected at various intervals for nutrient level analysis. Identification of the most abundant phytoplankters as well as secchi disk readings is also made. The food laden pond water is pumped through dense trays of small (1.5-2 mm) bivalve spat.

The flora of the pond can change weekly, usually with *Chaetoceros, Coscinodiscus, Thalassiosira, or Skeletonema sp.* dominant and much lower levels of pennate diatoms like *Nitschzia, Thalassiothrix, Asterionella, or Pleurosigma sp.* present. High levels of unidentified phytoflagellates can also dominate between diatom peaks. Natural cell densities of Resurrection Bay are 5,000 cells/ml while the pond can be manipulated to produce a dense 250,000 cells/ml or more for feeding the shellfish.

The pond could support good growth for one million 3 - 5 mm clam spat. The full production potential of the pond as a pre-nursery has yet to be tapped, however, due to the limitations of the natural ecosystem that develops in it. It is very difficult to drain and clean regularly so phytoplankton grazers, undesirable species of competitive microalgae, heavy particulate formation, and unlit depths tend to control and reduce the quantity and quality of microalgae that could otherwise grow. This year we have also begun to "inoculate" the pond with 10,000 liter batch cultures of *Thalassiosira gravida* and *Skeletonema costatum* isolated from natural blooms here. Once the pond is so inoculated the diatoms have usually bloomed in the pond. The tanks are filled with the same unfiltered, 70 m seawater as flows into the pond, nutrified with

Guillard's L1 medium, provided with aeration, and then inoculated with a carboy culture of the above species. During the summer passive solar gain quickly raises the tank temperature to between 13 C and 18 C which is 3 to 4 C warmer than the pond. Plastic sheeting over the top of the tank helps retain more heat during cooler periods. Growth is from ambient daylight only. A tank is harvested in 5 to 8 days at about 400,000 cells/ml. The same mono- or bi-specific tank cultures will also be fed directly to the pre-nursery spat to augment the ever-changing pond flora.

Because hatchery production of spat will quickly exceed the building and ponds present prenursery capacity and because the existing pond liner has many tears and holes it needs to be replaced as soon as possible. The plan is to replace the liner with four 40 foot diameter open top fiberglass tanks individually plumbed with seawater and drains. Algae cultures in these tanks could be grown much more intensively than possible in the pond because they can be easily and regularly drained and thoroughly cleaned. Improved passive solar gain may also accelerate the algae and spat grown with these partially recirculated cultures.

<u>Remote Nursery Systems</u>

Remote nursery systems offer several advantages over nursery culture at the hatchery. One is that it frees up hatchery space and personnel that can be better used in hatchery production. Another is that several remote nursery systems offer a redundancy of supply in case one of the systems fails. A third is that remote nursery systems can be located near the growout areas thus reducing transport costs. The big disadvantage to remote nursery systems is that the cost of pumping water at a remote location in Alaska made them impractical.

Recently, work conducted under the South Carolina Sea Grant program lead to the development of a tidally driven remote nursery system. This system, called a Tidally Driven Floating Upwelling System (tidal FLUPSY), uses the strength of tidal currents to force sea water, with its accompanying load of phytoplankton, through cages containing small clams. The system appears to work quite well and is easy to maintain. Because the system is driven by a natural energy source readily available in Alaska, it appears to have great promise here. Figure 3 at the back of this proposal presents a schematic of a tidal FLUPSY.

A prototype tidal FLUPSY was built toward the end of FY 96. Because of production problems in the hatchery there was no clam seed available to test in the FLUPSY. A modest amount of oyster seed was placed in the FLUPSY in lieu of clam and they did quite well for the time they were in it. The FLUPSY broke its moorings during a mid-winter storm and most of the seed was lost. The moorings have been strengthened and the FLUPSY is back in place. Clam seed, from the hatchery and/or the wild, will be placed in the FLUPSY in FY 97 to test growth potential. These tests will be carried over and expanded in FY 98. The production objective for a tidal FLUPSY will be to produce 15+mm littleneck clam seed in a 12 week period between April 15 and October 15.

OBJECTIVE 3. GROWOUT

A. Growout Techniques

The enhancement procedures that will ultimately be used under this project must be cost effective and efficient in producing harvestable clams in a reasonable time frame, and be compatible with the subsistence concept. For instance, it may be cost effective and efficient to grow cockles to harvestable size in a tidal FLUPSY, however managing a subsistence harvest from the FLUPSY could prove difficult.

At this point it appears that the most reasonable approach to providing clams for subsistence harvest is from beach growout systems. It is likely that predator control covering will be a necessary component of an enhanced beach area, however, setting up a system of uncovering an area for harvest and then recovering it would seem a relatively easy task. Because enhanced beaches seem to offer the best chance for meeting the project goal, much of the work under this project will be aimed at producing cost effective and efficient beach growout systems.

This does not preclude the use of hanging, floating or caged culture systems in this project. Some of these will be used during the development phase as learning tools to gain an understanding of growth and mortality under diverse conditions. It may also be that some of these systems prove so cost effective and/or efficient that they will need to be incorporated into the subsistence management plan for one or more of the villages.

2. Seeding Intertidal Areas

In 1995 a series of baseline surveys were conducted in the vicinity of Tatitlek, Port Graham and Nanwalek to select a cross-section of beaches that might be suitable for growout. One beach per village was selected. The Nanwalek beach is representative of moderate energy beaches, the Tatitlek beach is representative of open gravel beaches with good tidal exchange and the Port Graham beach is representative of protected areas. The Port Graham and Nanwalek beaches are located within two miles of one another and can be tended by the same crew.

The intent of the beach growout work is to establish similar growth and mortality, and predator control studies on each of the three beaches and compare the results. This information will be used to determine the kind of clam production, for each of the two species, that can be expected from each beach type, and what predator control measures seem to work best on each beach.

Clams were first seeded onto the project beaches in FY 96. Additional seeding will be done in FY 97. Preliminary results from the FY 96 seeding look very promising. Examination of caged clams from the three project beaches showed an average 30% increase in valve length from the time they were seeded in late June/early July to the end of the growing season (mid October). Overwinter survival averaged 82%. At this point there was very little difference in growth or mortality among the three project beaches.

The littleneck clam study involves the placement of seed clams (5 mm to 15 mm valve length) in a replicate, blocked design which will examine growth and mortality as a function of tidal height

and in the presence or absence of protective predator exclusion devices. A uniform seeding density of 30 seed clams per square foot is utilized.

The following is a description of the seeding procedures that are followed for littleneck clams. Figures 1 and 2 at the back of this proposal present a schematic of the seeding activities at the project beaches.

Growth and mortality of caged clams. To get an accurate assessment of growth and mortality of clams it is necessary that they be caged in order to prevent individuals from moving in or out of the sample. One hundred seed clams will be placed in "NorplexTM" bags for a detailed growth and mortality study. The valve lengths of all clams placed in the bags will be measured to the nearest 0.01 mm using vernier calipers. Clams placed in bags will be a random sample from the seed used in other parts of the study. Therefore, the mean lengths of clams in the bags will be used as the mean lengths of the clams seeded into other parts of the study.

Clam bag ends will be secured with electrical ties on one end and a 1" piece of split PVC pipe on the other end. Each bag will receive a shovelfull of sieved (1/2" sieve) gravel. Bags will then be nestled into the substrate to a minimum depth of 6". The top surfaces of each bag will extend a minimum of 1" above the substrate. Each bag will be secured to a piece of 1/2" rebar driven into the substrate to a minimum depth of 18" or when hitting bedrock. Identical study layouts will be used at all three Villages.

Bags will be retrieved at three-month intervals and all contents removed from the bags. The number of surviving clams, and the number of empty clamshells, will be determined. The valve length of each clam will be measured and recorded. Fouling organisms will be removed from the bags and clams will be replaced in the bags with a shovelfull of sieved (1/2") gravel. Clam bags will be carefully nestled in the sediment. It should take less than 20 minutes per bag to accomplish this. Clam bags should be retrieved individually, measured and replaced before the next bag is removed. This will minimize stress in the clams.

Clam enhancement evaluation. A minimum of 4 feet will be required between each treatment block. This will provide access without disturbing adjacent plots. Half the test plots will be covered with predator control netting. Car-cover netting will be used initially. However, as the clams grow and become more prone to sea otter predation, stronger mesh will be used. Experience with oyster hardening bags indicates that a heavy-duty vexar mesh will be sufficient, however wire mesh fencing cloth will be used if necessary. The netting will be precut to a dimension of 8'x 5'. It will be secured in a trench an all four sides of each 1.0 meter by 2.0 meter plot. The heavier mesh netting may be further secured by bar anchors set on the netting in the trench and covered over. Each plot will be marked with four pieces of PVC pipe driven into the substrate at each corner. Each piece of PVC pipe will have the plot number written on it (i.e. A +1.5). After all plots are seeded, the tidal elevation of the center of each plot or bag will be measured against a known tidal elevation. Sediment samples will be taken adjacent to each set of netted, un-netted and bagged samples for analysis of total volatile solids and sediment grain size. In addition to treatment samples, control stations will be sampled annually and processed in a similar manner.

Seeding. All large (>10.0 cm diameter) rock and cobble will be removed from the area to be seeded. The area will be dug to remove all clams larger than 1.0 cm. The valve length of clams removed will be measured and recorded. Three random samples of seed for each beach will be weighed and counted to obtain an average weight per clam. A total clam weight equivalent to 600 clams will be seeded into each 1.0×2.0 meter area as the tide floods. Clams will be seeded through the car cover netting.

Maintenance. Village culturists will need to monitor these studies on a weekly basis, or as tidal conditions permit. All rips in the netting must be repaired and all predators removed. Badly damaged nets should be replaced with as little disturbance to the culture as possible.

Data recording. Clams in the enhancement evaluation will be examined annually during the 1997, 1998 and 1999 fieldwork. Clam plots will be evaluated by noting the presence of predators, and covering the netted plots and collecting three randomly selected 0.1 M^2 samples from each plot. The clams in the samples will be counted, measured in-situ and immediately replaced at a shallow depth with the substrate taken from the quadrat. New netting will then be installed.

A sediment sample will be collected from the top four inches of the substrate at randomly selected stations along each of the orthogonal transacts. The RPD will be measured at each of these points and a second sediment sample retained for total volatile solids analysis. The substrate will be characterized to include the following:

- A. Substrate color
- B. Presence of attached macroalgae
- C. Presence of predators
- D. Evidence of excessive littoral drift or log damage
- E. Oily sheen
- F. Odor (hydrogen sulfide, ammonia or petroleum)
- G. Suitability for specific culture techniques.
- H. A photographic record of the site will be made to include at least 20 pictures describing the general area, shoreline, fetch, and substrate type.
- I. A small drogue will be placed in the water on arrival and its progress along the shoreline monitored during the period of study to assess currents.
- J. A transit will be used to measure the elevation of the water height at a specific time and of each sample station on the transects run orthogonal to the beach.
- K. Water temperature, dissolved oxygen and salinity will be measured. A 500 ml water sample will be retained for total suspended solids and total volatile solids analysis.
 - L. At a minimum, each beach survey will include:
 - 1. 12 shellfish samples
 - 2. 4 sediment samples (50 gm each) for sediment grains size analysis
 - 3. 4 sediment samples for Total Volatile Solids analysis.
 - 4. One 500 ml water sample

Sediment grain size will be determined using the sieve and pipette method. Sediments greater than 1 cm will be pooled. Additional sieve sizes will include 2 mm, 1 mm, 500 μ m, 125 μ m, and 63 μ m. Silt (>3.9 μ m) and clay (<3.9 μ m) will be differentiated using the pipette method.

Sediment Total Volatile Solids will be determined by drying a sediment sample at $103 \pm 2^{\circ}$ C until no further weight reduction is observed and then ashing the sample at 550° C until no further weight loss is recorded.

Water Total Suspended Solids and Total Volatile Solids. A 0.45 μ m glass filter is ashed at 550° C and weighed. A 350 ml sample of thoroughly mixed water is suction filtered and the residue dried at 103 ± 2° C to determine TSS. Total volatile solids are determined following ashing of the sample at 550° C.

OBJECTIVE 4. MANAGEMENT PLAN

The management plans for the subsistence beaches that will be developed under this project are important for two reasons. First, the enhanced clam populations created by this project will have some sort of predator protection making public access to this resource difficult. A management plan would establish procedures for making the clams available for public harvest while ensuring the long-term viability of the subsistence beaches. Second, an important aspect of creating the subsistence clam beaches is instituting a testing program for paralytic shellfish poisoning (PSP). The Alaska Department of Environmental Conservation (DEC), the agency responsible for PSP testing, will only establish PSP testing programs on beaches that have a harvest management plan.

A dialog with the Alaska Department of Fish & Game, the Alaska Department of Natural Resources and DEC, to begin the process of developing management plans for the subsistence beaches was initiated in FY 97. This will continue in FY 98. The objective for FY 98 will to obtain agreement with the state agencies on an outline for managing subsistence clam beaches developed by this project.

C. Cooperating Agencies, Contracts and Other Agency Assistance

This project will be conducted by the Chugach Regional Resources Commission (CRRC), a consortium of Native villages and associations in the Chugach Native Region that deals with natural resource issues and development, under a contract with the Alaska Department of Fish & Game. CRRC will be contracting with the Qutekcak Shellfish Hatchery in Seward to develop spawning and culturing techniques for clams and the 10 mm to 15 mm seed for growout. CRRC may also be contracting with various mariculture experts for technical advise and assistance.

SCHEDULE

A. Measurable Project Tasks for FY 98

10/97 - ongoing	continue to collect littleneck broodstock, obtain clearance and transport to
	hatchery
10/97 - 9/98	continue to develop techniques to mature and spawn littleneck broodstock
10/97 - 9/98	continue to develop techniques for producing 5 mm littleneck seed in

3/98 - 7/98 4/10/98 4/98 - ongoing 10/97 - ongoing	hatchery transfer 5 mm seed to hatchery pre-nursery and FLUPSY submit annual project report for FY 97 continue develop techniques for producing 10 mm to 15 mm seed for growout continue work on pursery production in tidal FLUPSY at Tatitlek
10/96 - ongoing	Obtain permits and continue growth/mortality and predator control studies for
4/10/99	submit annual project report for FY 98.

B. Project Milestones and Endpoints

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Objective 1.	
June, 1995	initial procedure developed for Littleneck clam
June, 1997	completed for littleneck clam
Nov, 1996	initial procedure developed for cockle
July, 1999	completed for cockle
Objective 2.	
September, 1997	Littleneck clam in hatchery
October, 1998	Complete tests on tidal FLUPSY.
November, 1999	Cockle in hatchery
Objective 3.	
August, 1995	Describe current local clam populations for Tatitlek and Port Graham/ Nanwalek areas.
September, 1995	Locate sites in Tatitlek and Port Graham/Nanwalek areas for developing beach growout methods.
March, 1996	Obtain permits and begin fieldwork at growout sites at Tatitlek and Port Graham/Nanwalek.
June, 1996	Initiate predator control studies on razor clam beaches near Eyak.
June/July, 1996	Conduct baseline beach survey at Chenega Bay and Ouzinkie.
June/July, 1997	Initiate process for establishing permanent subsistence beaches at Tatitlek and Port Graham/Nanwalek.
September, 1998	Initiate process for incorporating predator control
Objective 4.	
July, 1997	Initiate PSP sampling on beaches in Port Graham and Nanwalek (Tatitlek will be covered by nearby commercial mariculture activities.)
March, 1998	Reach agreement with state resource management agencies on how management plans for enhanced subsistence beaches will be developed
March, 2000	Have management plans for enhanced subsistence beaches in Eyak, Tatitlek, Port Graham and Nanwalek in place.

C. Completion Date

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The objectives of this project will be met in FY 2000.

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PUBLICATIONS AND REPORTS

April 15, 1996	FY 95 annual report due. Report will discuss progress to date, compare accomplishments against stated objectives and make recommendations regarding future work.
April 15, 1997	FY 96 annual report due. Report will discuss progress to date, compare accomplishments against stated objectives and make recommendations regarding future work.
April 15, 1998	FY 97 annual report due. Report will discuss progress to date, compare accomplishments against stated objectives and make recommendations regarding future work.
April 15, 1999	FY 98 annual report due. Report will discuss progress to date, compare accomplishments against stated objectives and make recommendations regarding future work.
April 15, 2000	FY 99 annual report due. Report will discuss progress to date and compare accomplishments against stated objectives.
June 30, 2000	Final report due.

PROFESSIONAL CONFERENCES

Staff from the Qutekcak Shellfish Hatchery will attend the Pacific Northwest Shellfish Conference, which will likely be held in Seattle or Portland, to present papers on hatchery and nursery culture techniques for littleneck clams and cockles. The Pacific Coast Shellfish Growers Association and the Sea Grant Program from the University of Washington and/or Oregon State University sponsor this conference.

COORDINATION AND INTERGRATION OF RESTORATION EFFORT

The project (96131) will complement Fish/Shellfish Study 13 <u>Effects of Hydrocarbons on</u> <u>Bivalves</u> conducted under State/Federal Natural Resource Damage Assessment. That project studied shellfish populations throughout the oil-impacted area. Growth and mortality studies were conducted, age and size information was collected and reciprocal transplants from oiled and control beaches were examined. It was determined that littleneck clam populations were adversely affected through increased mortality and reduced growth rates.

The Clam Restoration Project (96131) will provide future resources for subsistence harvest and will be valuable for Projects 95279(Subsistence Restoration Projects Food Safety) and 95052 (Community Interaction/ Traditional Knowledge) to develop harvest plans. Information from 95052 was used in the community survey, population assessment described in Objective 3.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

There are several major changes in the FY 98 proposal from how the work was envisioned to progress in the FY 97 approved DPD. Emphasis in FY 98 will be placed on the development of standardized techniques for the production of hatchery and nursery pond littleneck clam seed. Work on cockles will be postponed. Work on razor clam predator control studies will be curtailed. Growth and mortality analysis of seed planted in FY 97 and FY 96 will be reduced to the minimum necessary to maintain continuity in the growout portion of the project. Planting of littleneck clam seed produced in FY 98 will also be minimized.

PROPOSED PRINCIPAL INVESTIGATOR(S)

Dave Daisy/ Jeff Hetrick Chugach Regional Resources Commission 4201 Tudor Centre Drive, Suite 300 Anchorage, AK 99508 Phone: (907) 562-6647 Fax: (907) 562-4939









1998 EXXON VALDEZ TRUSTE OUNCIL PROJECT BUDGET October 1, 1997 - September 30, 1998

	Authorized	Proposed	1000 (Concession)	Marine I.	6	1.4.4. 4. 4.		
Budget Category:	FY 1997	FY 1998						
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Personnel		\$0.0				States .		
Travel		\$0.0			선가 ¹⁹ 동안 가 가 가 다 다 다 다 다 다 다 다 다 다 다 다 다 다 다 다			
Contractual		\$272.2						
Commodities		\$0.0	i internet internet and the second	an a	an the first states with some his a state of the states	an a	na art altantantantanti d	e. m. sum statuter and a strategical and
Equipment		\$0.0		LONG RA	NGE FUNDIN	IG REQUIREM	MENTS	
Subtotal	\$0.0	\$272.2	Estimated	Estimated	Estimated	Estimated		
General Administration		\$17.9	FY 1999	FY 2000	FY 2001	FY 2002		
Project Total	\$0.0	\$290.1	\$385.0	\$0.0	\$0.0	\$0.0	\$0.	0
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Full-time Equivalents (FTE)		0.0						
			Dollar amount	s are shown ir	thousands of	dollars.		
Other Resources								
Comments:								
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							Г	FORM 3A
	Project Nun	nber: 98131						
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	Agency. Ale	iona Depail		and Game				SUMMARY

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Prepared: 1 of 8

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1998 EXXON VALDEZ TRUSTEL COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

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Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FY 1998
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
		· ·				0.0
						0.0
						0.0
	Subtotal		0.0	0.0	0.0	
				Per	sonnel Tota	\$0.0
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description		Price	Trips	Days	Per Diem	FY 1998
						0.0
						0.0
					-	0.0
						0.0
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						0.0
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		u			Travel Tota	\$0.0
						FORM 3B
	Project Number: 98131				1	Personnel
1998	Project Title: Chugach Native Reg	ion Clam Re	estoration		'	& Travol
	Agency: Alaska Department of Fisl	h and Game				

DETAIL



1998 EXXON VALDEZ TRUST

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October 1, 1997 - September 30, 1998

Contractual Costs:			Proposed
Description			EV 1008
Contract with Chugach Begin	nal Besource Commission		272.2
Contract with Onugach negion			<i>LI L.L</i>
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When a non-trustee organizat	ion is used, the form 4A is required.	Contractual Total	\$272.2
Commodities Costs:			Proposed
			<u> </u>
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		Commodities Total	\$0.0
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	Project Number: 98131		DRM 3B
1998	Project Title: Chugach Native Region Clam Restoration	Con	tractual &
	Agency: Alaska Department of Fish and Game		ETAIL
Prepared: 3 of 8			6/24

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1998 EXXON VALDEZ TRUST COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

New Equipment Purchases:	Number	Unit	Proposed
Description	of Units	Price	FY 1998
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
These purchases approinted with replacement equipment should be indicated by placement of an R	Now Equ	inment Total	0.0
Existing Equipment lleage	New Lyu	Number	
Existing Equipment Usage.		of Unite	Agency
			Agency
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Project Number: 98131			
1998 Project Title: Chugach Native Region Clam Restoration		E	quipment
Agency: Alaska Department of Fish and Game			DETAIL
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Prepared: 4 of 8			6/24

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1998 EXXON VALDEZ TRUST SE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

	Authorized	Proposed					•	100 Sec. 10
Budget Category:	FY 1997	FY 1998						
Personnel	\$81.6	\$53.8						
Travel	\$2.4	\$2.4						
Contractual	\$213.0	\$201.0						
Commodities	\$2.2	\$0.0	i		in a constant			
Equipment	\$0.0	\$0.0		LONG R	ANGE FUNDI	NG REQUIRE	MENTS	
Subtotal	\$299.2	\$257.2	Estimated	Estimated	Estimated	Estimated		
Indirect	\$46.5	\$15.0	FY 1999	FY 2000	FY 2001	FY 2002		
Project Total	\$345.7	\$272.2	\$365.1	\$0.0	\$0.0	\$0.0		
Full-time Equivalents (FTE)		1.1						
			Dollar amount	s are shown ir	thousands of	dollars.		
Other Resources								
Hatchery Budget Breakdown Personnel 1/2 of Hatchery Speciali Fringe @ 219 Utilities Boiler Fuel Electricity	st I %	\$15.0 \$3.2 \$25.9 \$16.3		Contractual Shellfish H Supplies - acti Equipment Activated of 1/2 of nurs Coulter cou	lealth Mngt ivated carbon arbon filter sys ery pond upgra unter	stem ade	\$ \$ \$ \$	19.0 11.0 10.0 50.0 12.7
Sewer & Water		\$1.8	Tribal Administration				\$	16.1
Comments: Personnel has be added for activated carbon. T a coulter counter. All are need	een cut to Hatch he equipment li ded for the EVC	ery Manager st has been c S clam progra	(funded by CR hanged to an a am and are no	RC) and 1/2 o activated carbo t covered in ha	f full time assis on filter system atchery equipm	stant. A Suppl a, 1/2 of the nu nent package a	\$1 lies line ito rsery pon approved	en has been d upgrade and by legislature.
1998	Project Num Project Title Name: Chu	iber: 98131 : Chugach gach Regio	l Native Regi nal Resourc	on Clam Re es Commis	storation sion		9	FORM 4A Non-Trustee SUMMARY

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October 1, 1997 - September 30, 1998

Personnel Costs:		Months	Monthly		Proposed
Name Position Descri	ption	Budgeted	Costs	Overtime	FY 1998
					0.0
4 positions village project v	vorker	1.5	2412.0		3.6
1 position shellfish culture	& hatchery operations	12.0	4180.0		50.2
specialist.					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
	Outstand 1		0500.0		0.0
	Subtotal	<u> </u>	<u>6592.0</u>		¢50.0
	Tiek		Tetel		
			Total	Daily Dar Diam	Proposed
	Flic		Days	Per Diem	<u>FT 1996</u>
Hatcheny staff to present papers at Pacific N	lorthwest Shellfish 65	0 2	٥	120	2.4
Conference			5	120	0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	\$2.4
	her 00101			F	ORM 4B
	ber: 98131			F	ORM 4B Personnel
1998 Project Title:	ber: 98131 Chugach Native Region Clam I	Restoration		F	ORM 4B Personnel & Travel

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1998 EXXON VALDEZ TRUST COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

Contractual Costs:	Proposed FY 1998
Broodstock development and seed production at Qutekcak Shellfish Hatchery Contracts for technical assistance in hatchery, nursery and growout operations	181.0 20.0
Contractual Tot	al \$201.0
Commodities Costs:	Proposed FY 1998
Commodities Tota	 \$0.0
1998 Project Number: 98131 Project Title: Chugach Native Region Clam Restoration Name: Chugach Regional Resources Commission	ORM 4B ntractual & mmodities DETAIL
· 7 of 8	6/24



1998 EXXON VALDEZ TRUSTEL COUNCIL PROJECT BUDGET

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October 1, 1997 - September 30, 1998

New Equipment Purcha	ISES:	Number	Unit	Proposed
Description		of Units	Price	FY 1998
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
				0.0
Those purchases associa	ated with replacement equipment should be indicated by placement of an R.	New Equ	ipment Total	\$0.0
Existing Equipment Usa	age:		Number	
Description			of Units	
1998	Project Number: 98131 Project Title: Chugach Native Region Clam Restoration Name: Chugach Regional Resources Commission		F Ed	ORM 4B quipment DETAIL
Prepared: 8 of 8				6/24

Salmon Instream Habitat and Stock Restoration - L. Waterfall Barrier Bypass Improvement (Revised proposal 7/22/97)

Project Number:		98139A1 - CLO
Restoration Category:		General Restoration
Proposer:		S. Honnold, Alaska Department of Fish and Game
Lead Trustee Agency:		Alaska Department of Fish and Game
Cooperating Agencies:	.•	None
Duration:		4th year, 4-year project
Cost FY 98:	\$13.4	
Cost FY 99:	\$0	
Geographic Area:	Afogn	ak Island (Kodiak Island)
Injured Resource/Service:	Pink a	nd coho salmon

ABSTRACT

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This closeout project will focus on final reporting of the evaluation of the barrier bypass improvement at Little Waterfall Creek, as indicated by pink and coho salmon use of the bypass. The renovation of the bypass (decreased grades and additional resting pools) was completed in FY 96 and is expected to facilitate increased spawning habitat use by existing pink and coho salmon populations, thus increasing salmon production to optimum levels in ensuing years. The Little Waterfall Creek pink salmon run was poor (5,500 escapement) in 1996; however, 44% of the escapement (2,400) passed through the improved bypass. By comparison, in 1995, only 22% of the pink salmon escapement was observed using the bypass. Pink salmon use of the bypass in 1996 surpassed all previous years in terms of proportional use. A final report will be submitted for peer review by April 15, 1998 and finalized by September 30, 1998.

INTRODUCTION

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The proposed project will complete restoration efforts initiated in 1994 (Project 94139A1). The Little Waterfall barrier bypass project began as result of surveys (Restoration Study 93063) conducted on Kodiak Island which evaluated instream habitat and stock restoration techniques for wild salmon stocks (Willette et al. 1994). The emphasis of this evaluation was to improve or develop spawning habitat at systems with barriers to salmon passage which have historically prevented access. Surveys focused on systems which were directly impacted or were located in proximity to areas impacted by the *Exxon Valdez* oil spill (EVOS) with the intent of mitigating for injured spawning habitat (Figure 1). Data collected from these surveys were analyzed, including a cost to benefit analysis, (Hartman and Richardson 1993) to determine the most effective mitigation techniques for Kodiak Island salmon systems (Willette et al. 1994). As result of these surveys, the Trustee Council selected Little Waterfall Creek as a site for spawning habitat mitigation.

In FY95, pre-construction production parameters were assessed (coho salmon escapement), final engineering surveys completed, and design for bypass improvements finalized. In addition, engineering documents were completed for the contract bidding process, and the contract was awarded to SeaCoast Construction. Construction, however, scheduled to begin in July, and be completed near the end of the fiscal year. was delayed due to poor work conditions as result of high water events. Thus, construction did not begin until FY 96, and was completed in November. The delay in construction prevented evaluation of bypass use in the fall of 1995 (FY 96) since salmon were not present in LittleWaterfall Creek at that time. However, the evaluation of preproject production continued with salmon escapement and juvenile rearing abundance surveys, and egg to fry abundance estimates conducted. The renovated bypass was inspected in February 1996 (FY 96), and indicated that the majority of the project design had been adhered to; however, in June, after the melting of snow and ice, the entrance tank appeared too high. This design deficiency proved problematic for salmon passage when observing pink salmon use of the bypass in August. Field modifications were made which improved pink salmon passage. Approximately 44% (2,400) of the total pink salmon escapement (5,500) used the bypass to reach upstream spawning habitat surpassed all previous years in terms of proportional use. The small run, however, was well below average for even years (38,000). The evaluation of the bypass modification may be more representative when pink salmon escapements are closer to average. Juvenile abundance surveys, as well as spawner distribution surveys were conducted in FY 96 and will continue for the remainder of FY 97.

The proposed work for FY 98 will include summary and analysis of all data collected thus far. These data will be incorporated into a final report to close out the project. Reporting requirements were funded by ADFG general fund or Kodiak Regional Aquaculture Association (KRAA) prior to FY.

NEED FOR THE PROJECT

A. Statement of Problem

Several beaches on Afognak Island were heavily oiled as result of the *Exxon Valdez* oil spill (EVOS) in 1989, and remained oiled in 1990 (Willette et al. 1994; Figure 1). Little Waterfall Bay (Little Waterfall Creek drainage) was directly impacted by oil. The large amounts of oil persisting in bays, and streams and on beaches in Prince William Sound (PWS) damaged salmon stocks (Willette et al. 1994). Thus, similar damage may have occurred at Little Waterfall Bay and other Afognak Island locations.

Three barriers in Little Waterfall Creek have been bypassed with structures allowing increased pink and coho salmon passage to previously unused spawning habitat (Edmundson et al. 1994; Figure 2). Pink salmon escapements at Little Waterfall have averaged 38,300 from 1968-1996 (65,600 odd-year; 25,500 even-year), with a pre-bypass (1968-1980) average of 5,200 (7,000 odd-year; 3,900 even-year) compared to a postbypass (1981-1995) average of 57,200 (76,400 odd-year; 38,000 even-year) fish (ADFG unpublished data). Although the system has benefited from the installation of the barrier bypasses as indicated by the increased pink salmon escapement, the largest barrier bypass structure has not operated efficiently and has impeded salmon passage into the largest portion of spawning habitat (Willette et al. 1994). Since the installation of this bypass, pink salmon escapement to upstream habitat has averaged 10,700. Coho salmon escapement data is incomplete due to enumeration deficiencies (ADFG unpublished data), however, foot survey counts have ranged from 0 (several years from 1980 -1993) to 104 (1994). Juvenile production data parallel the adult escapement data with pink fry abundance indices less upstream of the bypass (0.54 fry/m2 in 1986; 95.5 fry/m2 in 1992) compared to downstream (338.1 fry/m2 in 1986; 224.9 fry per m2 in 1992) samples (Honnold 1996). Coho fry have not been identified during any pre-emergent sampling efforts; however, fewer coho fry have been detected above the barrier (0.20 CPUE) than below (0.44 CPUE) the barrier when minnow trapping in August 1995 (Honnold 1996).

Barrier height, the quality and quantity of spawning habitat above barriers, and the degree of utilization of available spawning habitat significantly affects the efficiency and cost effectiveness of barrier bypasses (Willette et al. 1994). Habitat utilization rates considerably less than estimated capacity is common (McDaniel 1981). A salmon spawning habitat evaluation was conducted as described by Olsen and Wenger (1991) in 1992 and characterized the useable habitat (Chambers et al. 1955) in Little Waterfall Creek (Willette et al. 1994). The area above the bypass comprised approximately 80% (~17,000 m 2) of the total stream habitat. The habitat was estimated to support 24,000 pink and 2,700 coho salmon based upon a 1:1 sex ratio (ADFG unpublished data), and an optimum female density for pink and coho salmon of 0.7 (Heard 1978) and 0.08 (Sheng et al. 1990), respectively.

The design and operation of the largest bypass structure was evaluated by an engineer in

1992 for deficiencies affecting salmon passage (Willette et al. 1994). The grade of the bypass was found to be 27%, which is considered too steep (Bruce McCurtain, ADF&G, personal communication). For example, a slope of 22% or less is recommended for sockeye salmon when resting pools (similar to those at Little Waterfall) are employed (Blackett 1987). Pink salmon, a less vigorous fish, may require even less slope (Honnold 1991). Thus, the evaluation indicated that the gradient of this bypass should be reduced. Furthermore, the evaluation recommended that the existing concrete entrance and resting tanks be modified to provide for extending the lower portion of the bypass and the addition of two new aluminum resting tanks (Honnold 1995; Figure 3).

B. Rationale/Link to Restoration

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The 1989 EVOS deposited oil on beaches in Little Waterfall Bay and adjacent areas on Afognak Island (Willette et al. 1994). Oil persisted in 1990, and may have resulted in similar impacts to resident salmon populations as were documented in PWS. Additional impacts include lost harvest opportunities due to fishery closures in 1989 (Schmidt et al. 1993; Swanton et al. 1993) and loss of income to local economies (Willette et al. 1994). Projects which provide increased salmon production will, potentially, offset economic impacts from EVOS; thus, provide more harvest opportunities for local residents of the Kodiak and Afognak Island Areas. In addition, projects that target systems in close proximity of documented oiling may provide more area specific benefits.

Barrier bypass (fish ladders) projects have been used extensively on Afognak Island to restore and enhance sockeye, coho, and pink salmon runs (Honnold 1991; Honnold and Edmundson 1993 and Edmundson et al. 1994). For example, the Laura Lake sockeye and coho salmon runs, historically significant producers, were initially started by construction of two bypasses to enable spawner access to underutilized habitat (Honnold and Edmundson 1993). Similarly, pink salmon production at Little Waterfall has been significantly improved through bypasses and increased spawning habitat use (Honnold 1996). The barrier bypass modifications were completed in FY 96 (as result of this project) and are expected to increase spawning habitat use by pink and coho salmon to optimum levels of colonization. The increased escapement to the optimum habitat will improve production and enhance harvest opportunities. An additional 24,000 pink salmon and 3,000 coho salmon are estimated to be available for harvest as result of production from the enhanced habitat use (Willette et al. 1994; Table 1). Originally, coho salmon production at full seeding of the upstream habitat was estimated to provide \sim 15,000 fish for harvest (Willette et al. 1994). However, egg-to-smolt survival assumptions (7.4%) were derived from sockeye salmon survival data (Honnold and Edmundson 1993). Survival of stream-rearing juvenile coho salmon (1-2%) is much less than that of lake-rearing sockeye (Bradford 1994). This lower survival may be related to their aggressive territorial behavior and may result in exclusion of rearing opportunities. Thus, coho production as a result of improved access to upper spawning habitat is revised to ~5,400, of which ~3,000 would be harvested. The original cost to benefit data indicated that this project would have long term benefits greater than costs of production

(Hartman and Richardson 1993). Lower coho salmon survival, however, would decrease the cost to benefit ratio but would still, likely, provide future benefits in excess of project costs.

Table 1. Spawner density, fecundity, survivals and exploitation rates used as planning assumptions to forecast pink and coho salmon production benefits for Little Waterfall Restoration project:

parameter	Mean	Source (Area)
Optimum female density (#/sq.m)	0.7	Heard (1978)
Average fecundity (1986)	1858	PWS Aquaculture Ass
Egg-fry survival (%) unpublished)	6.4	SE Alaska (ADF&G
Marine survival rate (%)	3.1	Alaska (Sharr et al.
1993)		
Exploitation rate (%)	54	Kodiak (ADF&G
unpublished)		
<u>Coho Salmon</u>		
	······································	
parameter	Mean	Source (Area)
Ontimum female density (#/sg m)	0.08	Shang et al (1990)
Average fecundity	4835	Alaska (ADF&G unpublished)
Egg-fry survival (%)	2.0	Bradford (1994)
Marine survival rate (%)	4.1	Washington, California

This project was designed to assist in achieving the objective, stated in the *Exxon Valdez Oil Spill Restoration Plan*, of accelerating the rate of recovery of damaged pink salmon resources on Afognak Island, and also replacing for injured spawning habitat in other areas of Kodiak Island. In FY 98 a final report will be prepared summarizing the results of monitoring and evaluation of the barrier bypass modifications, as required by supplementation criteria, to assess the likelihood of success and potential risks of supplementation.

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Chapman (1986)

C. Location

Exploitation rate (%)

The project is located at Little Waterfall Creek (stream number 251-822) on Afognak Island (Figure 1). Little Waterfall Creek drains into Little Waterfall Bay on northern Afognak Island (Figure 4). The benefits of this project will be realized by increasing pink and coho salmon returns to this system, providing approximately 24,000 and 14,000 pink and coho salmon annually for harvest, respectively. The residents of the city of Kodiak, northern Afognak Island will benefit economically from this project through direct commercial fishery receipts and all associated business enhancement. In addition, sport fishers, guides, and lodge owners as well as subsistence fishers, will benefit directly and provide direct economic return to the associated communities.

COMMUNITY INVOLVEMENT AND TRADITIONAL ECOLOGICAL KNOWLEDGE

The residents of Kodiak and Afognak Islands will continue to be involved in this project through the EVOS Trustee Council planning process. Information is provided to the communities through restoration work sessions, project planning documents, the Community Involvement Project, and media coverage. In addition, members of the Kodiak Regional Aquaculture Association (KRAA), composed of area fishers, are informed of project proposals and status of ongoing projects at board meeting open to the public. The Kodiak Regional Planning Team (KRTP), composed of KRAA, ADF&G and U.S. Fish and Wildlife Service participants assists with development of project proposals. The KRPT meetings are open to the public and representatives from the Kodiak Area Native Association, Kodiak Tribal Council, and the ADFG Subsistence Division are encouraged to attend. When applicable, local and traditional knowledge have been utilized for this project.

PROJECT DESIGN

A. Objectives

- 1. Conduct statistical analysis of pre and post bypass improvement data.
- 2. Document project progress.
- 3. Comply with supplementation criteria and guidelines.

B. Methods

1. Conduct statistical analysis of pre and post bypass improvement data.

Analysis of variance (ANOVA) or covariance (ANOCOVA) will be used to test for pre and post bypass improvement differences in indexed escapements, emergent fry indices, egg-to-fry survivals, and coho fry CPUE depending on which statistical method is appropriate (Vining pers. comm). In addition, escapement variability (run strength; odd/even year differences) will be accounted for by comparing proportions of spawners upstream and downstream of the bypass before and after the improvements. Statistical analysis of this comparison will be defined once data are available. 2. Document project progress.

The necessary documentation of project progress and results will be accomplished on schedule as outlined by the Trustee Council. This will include presenting a report at the annual Restoration Workshop, writing a final report and providing requested information in response to peer review comments.

3. Comply with supplementation criteria and guidelines.

The supplementation criteria and guidelines developed by the Trustee Council will be followed.

The project has provided improved spawning habitat for pink and coho salmon Coho salmon will also have access to additional rearing habitat. The barrier bypasses in place at Little Waterfall Creek have been operational since the late 1970's (Honnold 1991), thus the populations and sub populations of pink and coho salmon have had almost 20 years to adapt to initial system changes. This project is not expected to change the genetic variation or compositions of these populations. Since new stocks will not be introduced to the system hybridization will not occur.

Resident species, such as Dolly Varden char (Salvelinus malma), rainbow or steelhead trout (O. mykiss), three-spine stickleback (Gasterosteus aculeatus), freshwater sculpin (Cottus aleuticus) and sockeye salmon (O. nerka) are not expected to be negatively impacted by this project (Appendix 1). Improved spawning habitat access and increased salmon fry production (forage) may benefit resident species. The potential for interspecific competition (pink and coho salmon) reducing the benefit of this project is assumed to be minimal (Appendix 1). Although there is overlap in habitat use by pink and coho salmon, temporal and spatial separation minimizes competition. Both species will have equal opportunity to utilize the improved bypass, thus spawn in upstream habitat.

This project will provide additional pink and coho salmon for harvest in Little Waterfall Bay and other area waters. Mixed-stock fisheries problems are not anticipated as result of this project. Harvest regulations are currently in place to harvest pink salmon produced at Little Waterfall Creek (Brennan et al. 1996; Appendix 1). This project will not affect these regulations. Coho harvest regulations are also maintained for Perenosa Bay fisheries (Figure 5), and will allow adequate management of the increased coho runs.

Finally, all permit requirements for this project have been met. This includes land use approval by Afognak Joint Ventures, habitat impact assessment by ADFG, and NEPA compliance requirements.

C. Cooperating Agencies, Contracts and Other Agency Assistance:

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The Kodiak Regional Aquaculture Association (KRAA) funds an ADFG project located at Perenosa Bay. A portion of the Perenosa Bay rehabilitation and enhancement project includes work at Little Waterfall Creek. KRAA has provided assistance to the Little Waterfall Restoration project through sharing of personnel, equipment and logistics.

SCHEDULE

A. Measurable Project Tasks for FY 98 (October 1, 1997 - September 30, 1998)

Data analysis and summary; Restoration Workshop

Prepare final report for peer review Incorporate peer review comments and submit report to Trustee Council October 15, 1997 - January 30, 1998 February 1-April 15

July 1-September 30

B. Project Milestones and Endpoints

The project will be complete by 30 September 1998.

C. Completion Date

The project will be complete by 30 September 1998.

PUBLICATIONS AND REPORTS

See above schedule, milestones and endpoints.

PROFESSIONAL CONFERENCES

The principal investigator will attend the annual Restoration Workshop in FY 98. The workshop is not firmly scheduled at this time, however, is anticipated to occur in Anchorage.

NORMAL AGENCY MANAGEMENT

Not applicable

COORDINATION OF INTEGRATED RESEARCH EFFORT

This project has complimented ADF&G management programs, as well as KRAA enhancement activities by providing data on escapements, and juvenile salmon survivals that are not normal agency duties. Likewise, staffing, equipment, and baseline data that have been or are currently part of the ADF&G and KRAA programs at Little Waterfall Creek and nearby areas have assisted with this project.

EXPLANATION OF CHANGES IN CONTINUING PROJECTS

Not applicable

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PRINCIPAL INVESTIGATOR

Steven G. Honnold Commercial Fisheries Management and Development Division 211 Mission Road Kodiak, Alaska 99615 (907)486-1873 email - stevehon%fishgame@state.ak.us





1998 EXXON VALDEZ TRUCTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

r	Authorized	Proposed		in Berternet a				
Budget Category:	FFY 1997	FFY 1998						
<u> </u>								
Personnel	\$20.6	\$10.8		200 C				
Travel	\$1.0	\$1.0						
Contractual	\$1.2	\$0.0						
Commodities	\$0.4	\$0.0			an a			
Equipment	\$0.0	\$0.0		LONG R	ANGE FUNDIN	G REQUIREME	NTS	
Subtotal	\$23.2	\$11.8	Estimated	Estimated	Estimated	Estimated	Estimated	
General Administration	\$3.2	\$1.6	FFY 1999	FFY 2000	FFY 2001	FFY 2002	FFY 2003	
Project Total	\$26.4	\$13.4	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	
Full-time Equivalents (FTE)	0.5	0.2						
			Dollar amount	s are shown in	thousands of c	Iollars.		
Other Resources								
1998	Project Num Project Title	iber: 98139 : Salmon Ins	A1 stream Habita	it and Stock	Restoration			FORM 3A TRUSTEE





October 1, 1997 - September 30, 1998

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Personnel Costs:		GS/Range/	Months	Monthly		Proposed
Name	Position Description	Step	Budgeted	Costs	Overtime	FFY 1998
Markle PCN 5296	Fishery Biologist I	14B	1.0	4.5		4.5
	Biometrician II	19A	0.5	6.5		3.3
S. Honnold PCN 7045	FB III	18C	0.5	6.0		3.0
······································	Subtotal		2.0	17.0	0.0	
			3	ſ	Personnel Total	\$10.8
Travel Costs:		Ticket	Round	Total	Daily	Proposed
Description	Price	Trips	Days	Per Diem	FFY 1998	
Travel to annual restoration workshop - Kodiak-Anchorage round trip		0.4	1	3	0.2	1.0
					-	
		-				
	,					
					Travel Total	\$1.0
	Project Number: 98139A1					FORM 3R
	Dreiget Title, Selmen Instroom Hebit	at and Staal	Destaration			Descended
1998	Project mue: Samon instream nabita		Restoration			Personnei
	Sub Project: Little Waterfall Creek E	Barrier Bypass	s Improvemei	nt		& Travel
	Agency: ADFG					DETAIL
Prepared: 16 June 97 2 of 4	L					7/15/97

1998 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET

October 1, 1997 - September 30, 1998

		FF) (4000
		FFY 1998
Nutries and the form AA is required	0	
Commodities Costs:	Contractual Total	ş0.0 Proposed
Description		FFY 1998
	ommodities Total	\$0.0
C.		0014.00
Project Number: 98139A1	F	JRM 3B
Project Number: 98139A1 Project Title: Salmon Instream Habitat and Stock Restoration Output Desired wittle Waterfalling with the Project Title Stock Restoration	Fi Con	DRIM 3B tractual &
1998 Project Number: 98139A1 Project Title: Salmon Instream Habitat and Stock Restoration Sub Project: Little Waterfall Creek Barrier Bypass Improvement	F Con Cor	Tractual & nmodities


October 1, 1997 - September 30, 1998

New Equipment Purchases:		Number	Unit	Proposed
Description	· · · ·	of Units	Price	FFY 1998
Those purchases associated with replacement equipment should be indicated by placement of an R. New B			uipment Total	\$0.0
Existing Equipment Usage:		Number	Inventory	
Description		of Units	Agency	
1998	Project Number: 98139A1 Project Title: Salmon Instream Habitat and Stock Restoration Sub Project: Little Waterfall Creek Barrier Bypass Improvemen Agency: ADFG	t	F	FORM 3B quipment DETAIL