EVOS PROPOSAL SUMMARY PAGE

(Trustee Council Use Only)
Project No. ***G-030623***
Date Received ***8/30/02***

Project Title: PWSRCAC-EVOS Long Term Environmental Monitoring Program Submitted Under the BAA

Project Period: FY03-FY04

Proposer: John S. Devens, Ph.D.
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EVOS Funding: $70,900 in FY 03 ($65,000 direct costs; $5,900 NOAA GA)

Matching Funds: $65,000 matching from PWS RCAC

Study Location: Prince William Sound, Kodiak, Kenai Peninsula

Trustee Agency: NOAA

Abstract:
The Prince William Sound Regional Citizens' Advisory Council/*Exxon Valdez* Oil Spill Trustee Council Long Term Environmental Monitoring Program provides essential long term baseline measurements of hydrocarbon levels and sources at program sites within areas of the Prince William Sound, Kenai Peninsula, Kodiak, and Gulf of Alaska. The program objective is to provide a program for the collection of baseline data in mussel tissue and subtidal sediments that can be used to determine impacts of oil sources on the ecosystem. This program will provide an improved link to recovery status and greater efficiency in hydrocarbon sampling and analysis that has been on going since 1993 under the auspices of PWS RCAC.

I. INTRODUCTION

The Prince William Sound Regional Citizens' Advisory Council (PWS RCAC) seeks partnership with the Exxon Valdez Oil Spill Trustee Council (EVOSTC) to carry out long term baseline measurements of hydrocarbon levels at program sites in the geographic area impacted by the T/V *Exxon Valdez* oil spill of 1989.

The program proposed is a continuation of the Long Term Environmental Monitoring Program (LTEMP) established by PWS RCAC in 1993. The program's main objective is to collect hydrocarbon background data in mussel tissue that can be used to determine future impacts of oil transportation on the ecosystem.

The LTEMP was initiated in March 1993, with twice annual sampling during each successive year, with late winter sampling taking place in March and summer sampling in July. Through winter of 2002, Kinnetic Laboratories Inc. (KLI) has been contracted for all field sampling, laboratory analyses, and reporting. KLI has subcontracted to Texas A&M University's Geochemical and Environmental Research Group (GERG) to provide analytical services and technical support for all hydrocarbon analyses. Beginning in summer of 2002, Payne Environmental Services was awarded the contract for LTEMP. Labortory analyses are being provided by the National Oceanographic and Atmospheric Administration's (NOAA) Auke Bay Laboratory.

The LTEMP was designed around a Mussel Watch Program that includes the native blue mussel, *Mytilus trossulus* (formerly *M. edulus*) and associated sediments. Although subtidal and intertidal sediments have been taken over time, currently the program only samples sediments from the two sites in Port Valdez, terminus of the Trans Alaska Pipeline.

Mussels were selected as the indicator species for the LTEMP because they are:
- indicator species;
- important subsistence food;
- important prey item of sea birds and sea otters, and;
- commonly found throughout Prince William Sound and downstream habitats.

Mussel tissue has been analyzed for 39 polynuclear aromatic hydrocarbons (PAH), C-10 to C-34 aliphatic hydrocarbons (AHC), percent lipid and gonadal index. Sediments have been analyzed for the same PAH and AHC, as well as particle grain size and total organic carbon.

Results indicate a variety of sources of hydrocarbons in the study area including the EVOS spill in 1989, operations at the Alyeska Marine Terminal, combustion sources, boating and shop activities, normal oil seepage or coal deposits, biological processes, and atmospheric fallout. Generally, the hydrocarbon levels detected under LTEMP have been relatively low. The Shuyak station has been the cleanest of the ten stations, while the Alyeska Marine Terminal station continues to have the most elevated hydrocarbons. Concern over the hydrocarbon levels at this

station prompted PWS RCAC to add an additional sampling effort at the two Port Valdez stations in the fall of each year.

Results have been summarized in a year end report and periodically peer reviewed. The program underwent a full data analysis in 1998 and summarized in a report. The Port Valdez data was reviewed in 2000. Results from that review suggest that Alaska North Slope (ANS) crude oil residues from the terminal's ballast water treatment plant (BWTP) have accumulated in the intertidal mussels within the port.

II. NEED FOR THE PROJECT

A. Statement of Problem

The problem this project is designed to address is the identification of present and potential future adverse impacts on the ecosystem of Prince William Sound and the Gulf of Alaska as a consequence of oil transportation. Approximately a quarter of the nation's oil is produced in Alaska and is transported out of the state through Prince William Sound and the Gulf of Alaska. Oil transportation in the area did result in the nation's largest oil spill with the Exxon Valdez spill in 1989. Several smaller oil spills have since occurred.

Beyond the accidental spills, the Alyeska Marine Terminal is allowed to discharge the equivalent of one barrel of oil a day into Port Valdez. The PWS RCAC works not only to prevent the accidental releases, but also works to understand how the long-term low inputs of crude oil impact the ecosystem (Payne et al., 1998; Payne et al., 2001; Payne et al., 2002). The environmental monitoring initiated by PWS RCAC in 1993 is the only long-term hydrocarbon trend monitoring in the region.

Long term environmental monitoring needs to be implemented in order to identify the physical and biological changes taking place in the north Gulf of Alaska ecosystem. It is essential to distinguish between natural trends and human caused changes in the environment. Establishing a baseline is needed in order to identify and assess trends over time.

The growth in commercial and recreational use of the north Gulf of Alaska creates further complexity in the problem of having adequate baseline data. These sensitive coastal marine environments are experiencing increased pressures on already intense use. This is evidenced by the growth in numbers of large and small passenger cruise ship traffic, the extension of the longevity of the Trans Alaska Pipeline and its shipping activity, the new Whittier road access which is expected to create exponential growth in numbers of visitors, State oil and gas lease sales, new ports, increases in recreational uses, and demands for new access to fishing sites.

Baseline date is needed for the accurate assessment of recovery and to extend recovery determinations to the broader zone of the Prince William Sound, Kenai Peninsula, Kodiak and Alaska Peninsula. Essential tools will be of use to researchers, subsistence communities and trustees.

While the PWS RCAC investment in long term monitoring has been made independently since 1993, competing interests for funding have resulted in some decline in the LTEMP scope, in particular the exclusion of sediment sampling. While the monies to fund the majority of the sediment sampling were cut, there is strong sentiment for the need for continuance of such. While the PWS RCAC funding source for LTEMP is Alyeska Pipeline Service Company, there may be project outcomes indicating sources of pollution other than that produced by Alyeska. Cooperative sources of project funding for hydrocarbon sampling and testing may be appropriate.

B. Rationale/Link to Restoration

The program proposed is directly related to the GEM statement: "In establishing the GEM Program, the Trustee Council explicitly recognized that complete recovery from the oil spill may not occur for decades and that full restoration of injured resources will most likely be achieved through long-term observation and, as needed, restoration actions. The Council further recognized that conservation and improved management of injured resources and services will require substantial ongoing investment to improve understanding of the marine and coastal ecosystems that support the resources, as well as the people, of the spill region. In addition, prudent use of the natural resources of the spill area without compromising their health and recovery requires increased knowledge of critical ecological information about the northern Gulf of Alaska. This knowledge can only be provided through a long-term monitoring and research program that will span decades, if not centuries."

Under LTEMP, the PWS RCAC has already established a long-term hydrocarbon monitoring program in the EVOS region that can easily be incorporated into the GEM. Hydrocarbon monitoring is critical in the EVOS region due to not only the oil transportation activities in Prince William Sound, Cook Inlet and the Gulf of Alaska, but also due to all the other human activities that result in combustion sources of hydrocarbons.

C. Link to GEM Program Document

GEM's mission is to "sustain a healthy and biologically diverse marine ecosystem in the northern Gulf of Alaska (GOA) and the human use of the marine resources in that ecosystem through greater understanding of how its productivity is influenced by natural changes and human activities." GEM's mission would be directly supported by the inclusion of the LTEMP in the overall monitoring program. The LTEMP is a proven hydrocarbon monitoring program that not only detects and measures levels of hydrocarbons in the intertidal mussels and sediment, but it also fingerprints the sources to differentiate between natural and human sources.

The Cook Inlet Regional Citizens' Advisory Council (CI RCAC) has its own environmental monitoring program, similar in scope to the LTEMP. Together, the data produced by the two programs provide some of the only multi-year data for coastlines downstream of the most industrialized and populated areas in Alaska. These data are invaluable background for the GEM

program. It would be highly beneficial to the GEM program to incorporate the scientific foundation already in place with LTEMP.

The LTEMP has direct links to the five major goals outlined in the GEM program document:

1. ***Detect:*** Under LTEMP, mussels have been used as sentinels by detecting annual and long-term changes in the hydrocarbon inputs at the program sites.
2. ***Understand:*** Under LTEMP, the sources of the hydrocarbons are identified through fingerprinting techniques.
3. ***Inform:*** Each year, the LTEMP data is presented in a report and disseminated to the public. Oral presentations are made to the PWS RCAC Board of Directors. The report is provided to a variety of research and regulatory agencies. Presentations are made to a variety of audiences as requested.
4. ***Solve:*** The LTEMP provides valuable information on hydrocarbon levels that can help resource managers and regulators improve management of marine resources and address problems that may arise from human activities, specifically oil transportation. The data generated under the LTEMP can help those looking at subsistence food safety as well as regulators responsible for oversight of the Alyeska Marine Terminal and associated tankers.
5. ***Predict:*** Long-term data sets are necessary to be able to develop the capacity for predicting status and trends. The LTEMP is in its ninth year of operation.

The LTEMP proposed will help GEM meet some of its additional goals, such as leveraging funds, involving other agencies and groups, and increasing community involvement. The LTEMP was initiated by citizens of the EVOS region. Citizens along with scientific experts, continue to advise the program.

III. PROJECT DESIGN

A. Objectives

1. Take winter and summer samples at the ten program sites.
2. Analyze the samples.
3. Report on the analyses.

B. Procedural Methods

The basic sampling approach for this program is consistent with the National Oceanographic and Atmospheric Administration's (NOAA) National Mussel Watch Project where native populations of sedentary organisms are utilized as bioindicators of chemical contamination, and nearby sediments are used to evaluate trends in contamination in the marine environment.

Bivalves such as the blue mussel filter large volumes of water, and numerous studies have indicated that they can accumulate hydrocarbons to a level several orders of magnitude above the water column concentrations. Long term studies of mussel tissue at selected sites can provide information concerning the trends of hydrocarbon contamination at those sites. Bioaccumulation

of hydrocarbons in mussels is a dynamic process as mussels eliminate the contaminants from their body tissues both in response to cleaner conditions and through the release of gametes during spawning. For this reason, repeated sampling is helpful in determining trends in contamination, as each sampling event provides information on contamination levels that exist at that point in time.

Sediment analyses are intended to provide information concerning the potential accumulation of hydrocarbons in the subtidal environment. Sediment transport from beaches potentially contaminated with petroleum or deposition of hydrocarbons adsorbed on particulate matter are the primary processes contributing to hydrocarbon concentrations in subtidal sediments. For this program, recently-deposited sediments (top 2 centimeters [cm]) are examined to determine hydrocarbon content.

Analytical approach includes the use of compound-specific measurements for organic parameters such as PAH and AHC (including UCM). These parameters are used to assess hydrocarbon concentrations in both tissue (PAH and AHC) and sediment (PAH and AHC). Additional parameters analyzed for tissues included percent lipids. These measurements are important because the gonads in these organisms are largely composed of lipid material which is the primary storage vehicle for hydrocarbons (National Research Council, 1985). When the lipid-rich gametes are released during spawning, hydrocarbons are also discharged. Mussels in temperate areas generally spawn in the cooler months. Primary spawning (and release of lipid-rich gametes that may contain accumulated hydrocarbons) occurs from mid-April to early June. Sampling in late spring (March) allows collection of mussels in varying stages of gametogenesis, but prior to major spawning activity. Sample collection in the summer occurs in the late- or post-spawning period when mussel gonads are returning to a resting state.

Analytical strategy is summarized in Table 1.

Analytical methods include tissue sample collection in the intertidal area which is analyzed for PAH, AHC, and lipid content. Mussel samples designated for hydrocarbon analysis are collected by hand from the mid-intertidal zone of each station using a stratified random sampling design. Three replicates of 30 individuals each are collected from three randomly-selected points along a 30-m transect. Replicate mussel samples are analyzed for PAH, AHC, and percent lipids.

In addition to the tissue samples designated for chemical analysis, twenty additional mussels are collected at each station for assessment of gonadal state. Samples for gonadal index determination are also collected. A single composite sample of 20 individual mussels are collected at each intertidal station (approximately 7 individual mussels from each replicate area). These mussels are bagged and returned to the survey vessel without freezing. These live mussel samples are chilled in the refrigerator or a cooler with ice packs until processing.

Subtidal sediment samples are analyzed for the following parameters: PAH, AHC, PGS, and TOC. A modified Van Veen grab was used to collect each replicate. Field and equipment rinsate blanks are analyzed for PAH and AHC.

All samples are analyzed at NOAA's Auke Bay Laboratory in Juneau, Alaska.

Navigation and station location include the use of nautical and topographic charts, radar, and a global positioning system (GPS). A locally chartered vessel is used for all field surveys. In addition, during March surveys, Gulf of Alaska stations are sampled from a chartered float plane out of Anchorage. Beach sampling is accomplished using a Zodiac® outfitted with an outboard motor.

The project includes a comprehensive quality assurance, quality control (QA/QC) program that encompasses all aspects of the project, from initial sample collection through laboratory analysis and data analysis to reporting.

The early stages of the LTEMP program included an investigation of the statistical power of the study design which indicated that the triple replication in the existing study design was sufficient to address program objectives (KLI, 1993a).

Table 1.LTEMP Analytical Strategy.

Parameter	***Description***	***Matrix***	***Relevance***
Polycyclic aromatic hydrocarbons (PAH)	2 to 6-ring polycyclic aromatic hydrocarbon compounds; includes homologous series of aromatic hydrocarbons consisting of unsubstituted (parent) compounds, such as naphthalene, and substituted compounds, which are similar structures with alkyl side chains that replace hydrogen ions, such as C_1-naphthalene	Mussel tissue, sediment, and water (blanks)	Useful for determining hydrocarbon contamination and the relative contribution of petrogenic, pyrogenic, and diagenic sources; useful in source identification and determination of weathering rates
Aliphatic hydrocarbons (AHC)	Fully saturated normal alkanes (paraffins) and branched alkanes, n-C_{10} to n-C_{34}; includes the isoprenoid compounds pristane (C_{19}) and phytane (C_{20}) that are often the most abundant isoprenoids in petroleum hydrocarbons	Mussel tissue, sediment and water (blanks)	Useful for determining hydrocarbon contamination and the relative contribution of petrogenic and biogenic sources; useful in determination of weathering rates and rates of oil degradation
Unresolved complex mixture (UCM)	A mixture of hydrocarbons of undefined structure that are not separated by gas chromatographic techniques; represented by the total resolved plus unresolved area minus the total area of all peaks that have been integrated; a characteristic of some fresh oils and most weathered oils	Mussel tissue, sediment and water (blanks)	Useful for determining hydrocarbon contamination and the relative contribution of petrogenic, pyrogenic, and diagenic sources; useful in source identification and determination of weathering rates
Percent Lipid	Lipid material in mussel tissue is primary storage area for hydrocarbons; gametes are mostly comprised of lipids	Mussel tissue	Useful in determining spawning state of mussels; hydrocarbon body burdens decrease when lipid-rich gametes are released during spawning
Particle Grain Size (PGS)	Percent sand, silt, and clay	Sediment	Assessment of particle size distribution in sediments; potentially used to standardize organic parameters such as PAH and AHC
Total Organic Carbon (TOC)	Organic carbon	Sediment	Assessment of organic carbon load in sediment; potentially used to standardize organic parameters (PAH and AHC)
Total Resolved Aliphatic Hydrocarbon (TRAHC)	A mixture of hydrocarbons defined and undefined by gas chromatographic techniques that represents the total resolved and unresolved area of the GC run. Includes the AHC analyte list, UCM, and other compounds (e.g., plant waxes and lipids)	Mussel tissue	Provides additional information concerning biogenic (biologically sourced) component of the hydrocarbons that may be present in the mussel tissue

C. Statistical Methods

In order to determine baseline conditions and help identify potential future impacts of oil transportation, the LTEMP was initially designed to test the following null hypotheses:

- $H_0$1: No differences can be detected in biological, chemical, or physical parameters between sampling times.
- $H_0$2: No differences can be detected in biological, chemical, or physical parameters among monitoring sites (affected and reference sites).
- $H_0$3: No intereactions between sampling time and station effects can be detected.

The first of the null hypotheses deals with temporal differences at individual monitoring sites, while the second examines spatial differences. The final hypothesis addresses potential interaction effects of time and space in terms of differences between stations. Statistical testing was carried through 1994 and subsequently dropped from the program due to budget constraints. However, since the overall program design has remained essentially the same, data generated after 1994 may be added to the baseline information from the first two years of the program.

D. Description of Study Area

Table 1. Station Location and Sampling Information

Station Location	Station Designation	Station Type	Decimally-coded latitude and longitude readings from winter 2000 survey	
			Latitude	Longitude
Aialik Bay	AIB-B	Intertidal Mussels	59.88	149.66
Alyeska Marine Terminal	AMT-B	Intertidal Mussels	61.09	146.41
	AMT-S	Subtidal Sediment	61.09	146.39
Disk Island	DII-B	Intertidal Mussels	60.50	147.66
Gold Creek	GOC-B	Intertidal Mussels	61.12	146.50
	GOC-S	Subtidal Sediment	61.12	146.49
Knowles Head	KNH-B	Intertidal Mussels	60.69	146.59
Sheep Bay	SHB-B	Intertidal Mussels	60.65	145.99
Shuyak Harbor	SHH-B	Intertidal Mussels	58.50	152.63
Sleepy Bay	SLB-B	Intertidal Mussels	60.07	147.83
Windy Bay	WIB-B	Intertidal Mussels	59.22	151.52
Zaikof Bay	ZAB-B	Intertidal Mussels	60.27	147.09

E. Coordination and Collaboration with Other Efforts

Prince William Sound Regional Citizens' Advisory Council cooperates with several agencies and groups throughout the region and state. Participation from Native Alaskan communities in particular is encouraged in order to garner local knowledge and gain feedback regarding the PWS RCAC's work.

PWS RCAC has contracted for sampling and reporting to Kinnetic Laboratories Inc. and more recently with Payne Environmental Consultants Inc. Laboratory analysis is currently performed at NOAA's Auke Bay Laboratory. Previous analyses were performed at GERG, Geochemical and Environmental Research Group at Texas A&M University. An independent scientific peer review of the contractor's draft product is performed periodically. An in depth data analysis was performed in 1998 (J.R. Payne Environmental, 1998).

The National Oceanic and Atmospheric Administration (NOAA)'s Mussel Watch Project samples five sites in Alaska, two of which are in the Prince William Sound at Siwash Bay and Mineral Creek. Sampling frequency is once every two years. NOAA and PWS RCAC coordinate with shared samples.

IV. SCHEDULE

A. Project Milestones

Objective 1. Take winter and summer samples at the ten program sites. To be met by July 31, 2003.
Objective 2. Analyze the samples. To be met by August 2003.
Objective 3. Report on the analyses. To be met by September 2003.

B. Measurable Project Tasks

FY03, 1st quarter (October 1, 2002-December 31, 2002)
October 1, 2002: Notice to Proceed

FY 03, 2nd quarter (January 1, 2003-March 31, 2003)
January 13 – 17: Annual EVOS Workshop
March Field Sampling at the ten program sites

FY03, 3rd quarter (April 1, 2003-June 30, 2003)
April 15: Field Survey Report
May 15 Laboratory Analysis and QA/QC
May 30: Laboratory Reporting

FY03, 4th quarter (July 1, 2003 – September 30, 2003)

July 31:	Data Validation and Management
July:	Field Sampling
July 31:	Field Survey Report
August 15:	Laboratory Analysis and QA/QC
August 29:	Laboratory Reporting
September15:	Data Analysis
September 30:	Submit final report (which will consist of draft manuscript for publication) to EVOS

V. RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES

A. Community Involvement and Traditional Ecological Knowledge (TEK)

PWS RCAC operates a standard practice of making annual presentations and mailing a quarterly PWS RCAC Newsletter to most post office boxes in the affected communities. Presentations and articles are offered in lay terms and technical information is offered upon request. PWS RCAC managers make a practice of going out into the communities to dispense project information, including LTEMP, to the general population.

In order to encourage greater community participation, technicians from local communities will be recruited and hired to accompany scientists during the collection of samples. The openings will be rotated between communities to broaden the reach of participation and understanding about the long term monitoring project.

PWS RCAC works closely with other federal, state, Native, and local government agencies, conservation organizations, businesses, and private landowners. Community involvement is inherent in PWS RCAC's nineteen member Board of Directors, and committee memberships, which includes the following community representatives:

Executive Committee:

Stephen Lewis, President	Seldovia
Dennis Lodge, Vice President	Seward
Pete Kompkoff, Secretary	Chenega Bay Corp., Chenega IRA Council
Jane Eisemann, Treasurer	Kodiak
Stan Stephens, Member at Large	AK Wilderness Recreation & Tourism Association
Tom Copeland, Member at Large	Oil Spill Region Environmental Coalition
Paul McCollum, Member at Large	Homer

Other Directors:

John Allen	Tatitlek Corp., Tatitlek Village IRA Council
Margy Johnson	Cordova
Marilynn Heddell	Whittier
Patience Andersen-Faulkner	Cordova District Fishermen United
JoAnn McDowell, Ph.D.	Valdez
Jim Nestic	Kodiak Village Mayors Assoc.
Mike Williams	Valdez
Al Burch	Kodiak Borough
David Marquez	Alaska State Chamber of Commerce
Blake Johnson	Kenai Peninsula Borough
Louis Beaudry	Prince William Sound Aquaculture Corp.
Sheri Buretta	Chugach Alaska Corporation

Scientific Advisory Committee (This committee oversees LTEMP):

Richard Tremaine, Chair	Anchorage
Dr. Peter Armato,	Seward
Gig Currier,	King Salmon
Michelle Hahn O'Leary,	Cordova
AJ Paul, Ph.D.	Fairbanks
John Williams	Cordova
Gene Dickason	Anchorage

B. Resource Management Applications

The data generated under LTEMP can be used for subsistence food safety issues as well as regulatory issues surrounding the Alyeska Marine Terminal (Ballast Water Treatment Plant) and associated tankers. The data has been used in the past to help PWS RCAC comment on specific regulatory items such as the recent Right of Way renewal permit (Payne, 2002).

VI. PUBLICATIONS AND REPORTS

At this time, we have not identified any professional publications for manuscript submission. The PWS RCAC would rely upon the EVOS TC to suggest appropriate publications. We often require our contractors to submit reports in manuscript form for possible publication.

Project reporting includes:

1. March-September, 2003 Monthly Status Report
2. September, 2003 Final annual report

VII. PROFESSIONAL CONFERENCES

No travel funds for professional conferences are being requested. PWS RCAC is prepared to pay conference costs associated with presenting LTEMP. PWS RCAC managers frequently deliver papers at professional conferences and are willing to present project results when applicable.

VIII. PERSONNEL

A. Principal Investigator (PI)

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PWS RCAC is an independent non-profit organization formed after the T/V *Exxon Valdez* oil spill of 1989 to promote environmentally safe operation of the crude oil terminal in Valdez and the tankers it serves. Under a contract with Alyeska Pipeline Service Company, PWS RCAC monitors and advises Alyeska on terminal operations, spill prevention, response planning, and other environmental issues. The federal Oil Pollution Act of 1990 requires an industry funded citizens' advisory group for Prince William Sound. Our 19 member board includes communities affected by the Exxon Valdez oil spill and interest groups with a stake in the affected region.

The Scientific Advisory Committee sponsors PWS RCAC LTEMP. The committee oversees and performs periodic peer reviews of the work.

B. Other Key Personnel

PWS RCAC LTEMP Project Manager: Lisa Ka'aihue

C. Contracts

Dr. James Payne will manage this program. He has served in a similar role for the PWS RCAC during the 1993-1996 LTEMP Data Analysis of Hydrocarbons in Intertidal Mussels and Marine Sediments Program, completing that project on time and on budget. More recently, he was the Program Manager on two other PWS RCAC programs to: 1) complete an in-depth assessment of the potential impacts of BWTF effluent on the biota of the Port Valdez (Payne et al. 2001); and 2) evaluate the Alyeska Pipeline Service Company's Mixing Zone and NPDES Permit Renewal Applications (Payne et al. 2002). Key members of the teams involved in those previous efforts

are reassembled with one additional member (Jeffrey Short) for the proposed project, and each member of the proposed team has worked previously for the PWS RCAC.

In undertaking his role as Principal Investigator, Dr. Payne brings over 28 years of national and international experience in the study and evaluation of oil spills in the marine environment, and he has been involved in Alaskan oil spill research in both sub-Arctic and Arctic regions since 1980. In his role as Project Manager, Dr. Payne will be responsible for coordinating all efforts related to the project, including the schedule and budget. He will have overall management, document preparation, and quality control responsibility for the draft and final reports. As such, he will be the principal point of contact with the PWS RCAC for this project.

Dr. Payne will be supported throughout the project by Mr. William Driskell, Mr. Dennis Lees, and Mr. Jeffrey Short. The team of Payne, Driskell, and Lees has worked together before for the PWS RCAC, CIRCAC (two contracts), the University of Alaska/Alaska Science and Technology Foundation, and NOAA; and Payne and Short have teamed (with Mike Salazar) to undertake the 2001 Port Valdez Monitoring Program for PWS RCAC.

Mr. Jeff Short will be the manager for the data analyses at NOAA's Auke Bay Laboratory.

IX. PRINCIPAL INVESTIGATOR QUALIFICATIONS

See Attachment B for Dr. Deven's resume.

X. LITERATURE CITED

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KLI. (Kinnetic Laboratories, Inc.) 1993. Power Analysis Report and Recommendations for Sampling Based on Subset of Highly Replicated Data from LTEMP Survey Number One. Prepared for the Prince William Sound Regional Citizens' Advisory Council Long-Term Environmental Monitoring Program. 36 pp and appendices.

KLI. (Kinnetic Laboratories, Inc.) 1994. 1993 Annual LTEMP Monitoring Report. Prepared for the Prince William Sound Regional Citizens' Advisory Council Long-Term Environmental Monitoring Program. 101 pp and appendices.

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Payne, J.R., W.B. Driskell, M.C. Barron, and D.C. Lees. 2001. Assessing Transport and Exposure Pathways and Potential Petroleum Toxicity to Marine Resources in Port Valdez, Alaska. Final Report prepared for Prince William Sound Regional Citizens' Advisory Council, Anchorage, AK 99501. Prepared by Payne Environmental Consultants, Inc., Encinitas, CA 92024. December 2001. 72 p.

Payne, J.R., W.B. Driskell, M.C. Barron, D.C. Lees, and J.A. Kalmar. 2002. Evaluation of Mixing Zone and NPDES Permit Renewal Applications for BWTF at Alyeska Marine Terminal. Final Report prepared for Prince William Sound Regional Citizens' Advisory Council,

Anchorage, AK 99501. (PWS RCAC Contract No. 551.02.1). Prepared by Payne Environmental Consultants, Inc., Encinitas, CA 92024. April 24, 2002. 32 p.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
PROJECT BUDGET

Budget Category:	Proposed FY 03
Personnel	$50,000.0
Travel	$24,775.0
Contractual	$0.0
Commodities	$55,225.0
Equipment	$0.0
Subtotal	$130,000.0
Indirect	
Project Total	$130,000.0
Other Funds	

Comments:
PWS RCAC will provide 50% of the project's funding ($65,000) to reduce EVOS TC participation at 50% of the project funding. In-kind funding provided by PWS RCAC includes manager time of approximately 100 hours, Scientific Advisory Committee volunteer time of approximately 150 hours, and miscellaneous office expenses for faxing, copying, telephone calls and the such. These in-kind expenses are estimated at greater than $12,000.

NOTE FROM TRUSTEE COUNCIL STAFF:
THIS BUDGET SHOWS TOTAL PROJECT COST (I.E., BOTH PWSSC'S AND EVOS TRUSTEE COUNCIL'S CONTRIBUTIONS). 11/25/02, TRUSTEE COUNCIL APPROVED $70,900 FOR THIS PROJECT -- THIS CONSISTS OF $65,000 FOR PWSRCAC IN DIRECT PROJECT COSTS AND $5,900 TO COVER NOAA'S COST OF ADMINISTERING THE PROJECT ON BEHALF OF THE TRUSTEE COUNCIL.

FY03

Prepared: 8/30/02

Project Number: G-030623
Project Title: Long Term Environmental Monitoring
Name: PWS RCAC

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
PROJECT BUDGET

Personnel Costs:			Months	Monthly	
Name	Description		Budgeted	Costs	Overtim
J.R. Payne	Project Manager		1.5	18000.0	
W.B. Driskell	Subcontract Labor		1.5	11000.0	
D.C. Lees	Subcontract Labor		0.5	13000.0	
	Subtotal		3.5	42000.0	0.
					Personnel Tota

Travel Costs:	Ticket	Round	Total	Dail
Description	Price	Trips	Days	Per Dier
Outer coast charters	4000.0	2	1	
Prince William Sound charters	4000.0	2	1	
Port Valdez charter	3000.0	2	1	
Presentation to PWS RCAC Board	1200.0	2	3	125.
				Travel Tota

FY03

Prepared: 8/30/02

Project Number: G-030623
Project Title: Long Term Environmental Monitoring
Name: PWS RCAC

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
PROJECT BUDGET

Contractual Costs:
Description
Contractual Tota
Commodities Costs:
Description
L/D Telephone
Photocopies
Shipping
Courier & overnight mail
Laboratory analyses
Commodities Tota

FY03

Prepared: 8/30/02

Project Number: G-030623
Project Title: Long Term Environmental Monitoring
Name: PWS RCAC

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
PROJECT BUDGET

New Equipment Purchases:	Number of Units	Un Pric
Description		
Indicate replacement equipment purchases with an R.		**New Equipment Tot**

Existing Equipment Usage:	Numbe of Unit
Description	

FY03

Prepared: 8/30/02

Project Number: G-030623
Project Title: Long Term Environmental Monitoring
Name: PWS RCAC