

Fiscal Year 2003 Work Plan

Oil Spill Recovery Institute

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1.0 Introduction

This Annual Plan describes the oil pollution research and development (R&D) program for the Oil Spill Recovery Institute (OSRI) during Fiscal Year 2003 covering the period from October first of the year 2002 to the thirtieth of September 2003 (as revised in February 2003).

The OSRI R&D Grant Program was established in 1998 to solicit and administer oil pollution research and development projects. Initially, the programs were categorized into three program areas (technology, ecology and public outreach and education). In 2002-2003, a series of strategic planning sessions of the OSRI Advisory Board resulted in a revision of the program areas and adoption of four program goals which are detailed in Section 2.1 of this document. R&D grants will be awarded and administered in accordance with the guidelines contained in the OSRI Grant Policy Manual.

2.0 Program Background

2.1 Oil Pollution Research and Development Plans

In 1995, OSRI published an Oil Pollution Research and Technology Plan for the Arctic and Sub-Arctic (Thomas et al. 1995) that provides a review and the guidance for developing and managing the OSRI R&D program. This plan used existing oil pollution R&D programs as a guide, particularly the National Oil Pollution Research and Technology Plan, published by the Interagency Coordinating Committee on Oil Pollution Research (ICOPR 1992). This plan describes the scope of oil pollution prevention and response R&D, and OSRI's geographic focus on Alaska's oil transport system. In 1997, OSRI held a workshop to update Arctic and Sub-Arctic oil pollution issues for the Advisory Board. At this workshop R&D efforts conducted after the Exxon Valdez Oil Spill (EVOS) were reviewed and the revised national plan for oil pollution research and technology was presented (ICOPR 1997). Based on this workshop, the OSRI Board endorsed three program areas of applied technology, predictive ecology and public education and outreach.

In 2002, the OSRI Board solicited a program assessment by the National Academies' Polar Research Board (PRB). In response to the PRB report, published in early 2003, the OSRI Advisory Board deleted the three program areas, revised its Strategic Plan and adopted four goals for OSRI programs:

- Understand – Attain a four-dimensional* interdisciplinary understanding of Prince William Sound to enable detection and prediction of spill-related impacts and subsequent recovery. (* Time and 3-dimensional space – x, y, z coordinates)
 - Design Nowcast/Forecast observation and modeling system, demonstrates its utility, and seek long-term operation funding.
 - Conduct environmental research.
 - Profile potential impacts on the economy, life-style and well-being of communities and resource users in Prince William Sound.

- Respond – Enhance the ability of oil spill responders to mitigate impacts of spills in Arctic and sub-Arctic marine environments.
 - Fill knowledge gaps on behavior of spilled oil.
 - Fill knowledge gaps on use and effectiveness of specific mitigation techniques.
 - Identify and evaluate new prevention and response technologies.
- Inform – Disseminate information and educate the public on the issues of oil spill prevention, response and impacts.
 - Publish scientific and technical results in the open literature.
 - Brief oil spill responders on OSRI products and assist to include them in operational activities.
 - Facilitate the exchange of information and ideas.
 - Provide graduate and undergraduate fellowships and internships.
- Partner – Partner with other organizations to take advantage of pooled funding, facilities, knowledge and experience.
 - Collaborate with other partners in achieving a long-term coastal and ocean observing system for Alaska.
 - Coordinate with the efforts of other related programs, such as the Gulf Ecosystem Monitoring (GEM) program and programs of the North Pacific Research Board (NPRB).

2.2 Grant Program Authority

The Oil Pollution Act of 1990 (OPA90) established the Prince William Sound Oil Spill Recovery Institute (OSRI) to conduct R&D programs to develop the best available technology for dealing with oil pollution in Arctic and Sub-Arctic regions and implement long-term environmental monitoring in conjunction with federal and state agencies in the Greater Prince William Sound region (Title V, Section 5001). Under Title V, Section 5006 of OPA90, Congress authorized OSRI \$23 million over 10 years from the TAPS Fund but only after outstanding claims were resolved. In FY97, after the outstanding TAPS claims were settled, Congress appropriated \$22.4 million of the remaining funds to be held by the U.S. Treasury with the annual interest awarded to OSRI for implementation of the R&D program for the Arctic and Sub-Arctic (Coast Guard Reauthorization Act of 1996). In FY02, Congress extended OSRI through the year 2012.

2.3 R&D Grant Policies and Procedures

OSRI adopted an R&D grant program based on policies and procedures used by the National Science Foundation (NSF), NOAA's National Undersea Research Program and the EVOS Trustee Council. The basic document that governs the OSRI program is the Grant Policy Manual (GPM). The GPM provides guidance on the various provisions of program management. All OSRI staff, committee members, and board members will follow the guidelines contained in the GPM when processing and managing OSRI grants

and projects. The OSRI GPM and other OSRI documents and forms, including application packages, are available on the OSRI web site at www.pws-osri.org, or by request.

2.4 Approach

OSRI encourages team science for both technology and ecology projects by rating the proposals on the basis of vertical integration of the research team with regulators, managers and user groups. Also, where it is appropriate, the proposals will be rated on the basis of horizontal integration of the research teams with respect to discipline and organization. Proposals that use a bioregional, public decision-making processes to establish research goals are encouraged.

2.5 Roles and Responsibilities

OSRI will assist in forming R&D teams, and when necessary, take an active part in convening workshops to address important issues, participate in assessments of research issues and planning, and disseminate results. The following roles and responsibilities are assigned:

Advisory Board – Set strategic direction, review program toward accomplishing strategic goals, define duties of OSRI director and other staff, appoint and evaluate director and other OSRI staff, establish subcommittees, approve bylaws, set broad annual scientific priorities, approve annual program plan, seek operational coordination with the Prince William Sound Science Center and its Board of Directors, resolve complaints and financial award issues, act to fill vacancies on the Board, ensure fiduciary responsibilities are met, and assist OSRI Director and Science Director with partnerships.

OSRI Director – Assists the OSRI Science Director in preparing the annual work plan, the revised business and strategic plans and communicates with the OSRI Board on a regular basis concerning administrative and fiduciary issues. Hires and fires staff, and ensures that administrative support is available to implement OSRI R&D programs.

Science Director – Provides leadership in planning research programs, prepares annual work plans in consultation with the Work Plan Committee, works with OSRI Director on budget planning, and implements the work plan as approved. Determines and/or recommends contract awards, works with the Scientific and Technical Committee on proposal RFPs and reviews, and ensures compliance with all policies and procedures of the Grant Policy Manual.

Scientific and Technical Committee – Provides advice to the Board including recommendations regarding the conduct and support of research, projects and studies related to Arctic or sub-Arctic oil spills or the effects of such spills. Reviews proposal solicitations and assists the Science Director in peer reviews of proposals. Reviews the Science Director's recommendations for medium size grant awards and recommends large grant awards to the Advisory Board.

OSRI Staff - provide administrative support to the Director to carry out the R&D Grant Program.

2.6 Types of Funding

OSRI awards will be divided into three main categories:

A. Large Awards (\$100,000 or greater):

1. Applied technology grants that include proof of concept (alpha testing) of new technologies and pilot implementation projects for new applications of proven technology (beta testing).
2. Applied predictive ecology grants that develop nowcast/forecasting capability. These usually consist of numerical models and their monitoring programs for animal populations at risk.

B. Medium (\$25,000-100,000) and Small Awards (under \$25,000)

1. R & D projects.
2. Workshops that have fact-finding or fact-demonstration goals related to technology, ecology and education.
3. Publications of various types that promote the OSRI R&D program to the scientific community and the general public.

C. Fellowships & Internships (under \$25,000 per year)

1. Fellowship Grants to support post-doctoral and graduate students in research related to oil pollution prevention and response in the Arctic and Sub-Arctic.
2. Internships to support high school and undergraduate college students to work with qualified researchers on OSRI projects or those relating to oil pollution prevention and response in the Arctic and Sub-Arctic.
3. Preference will be given to those proposals that fall within one of OSRI's three program areas.

2.7 Application and Award Process

OSRI staff, committee members, and board members will follow the guidelines and procedures detailed in the Grants Policy Manual (GPM). The OSRI GPM and other OSRI documents and forms, including application packages, are available on the OSRI web site at www.pws-osri.org, or by request.

3.0 Programs – Goal 1 - Understand

New Programs

Biological Modeling Workshop

This project funds a workshop to develop approaches to incorporating biological modeling within the OSRI Nowcast-Forecast program. The workshop will be scheduled in June or July of 2003 and will assess modeling techniques as well as data requirements and availability by bringing together researchers from OSRI and other organizations involved with data collection in the PWS region to identify suitable methods and develop a solicitation. Advertisements for the modeling work would begin in the latter part of FY03 and contracting would occur under the FY04 budget for “Coupling of OSRI Monitoring and Modeling.”

FY03 funding for this workshop is \$25,000

Nowcast Forecast Planning Workshop

This project funds a science planning effort the Nowcast-Forecast program which describes the Prince William Sound ecosystem in four dimensions (three dimensions and time) and is presently the primary research effort of the Institute. The workshop will focus on science planning for the next phase of PWSNF and is intended to ensure that the quality and direction of research within the Nowcast-Forecast program remains closely aligned with the goals and mission of the Institute. Scheduling of this workshop will be in conjunction with the biological modeling workshop.

FY03 funding for this project is \$25,000.

Continuing Programs – Previously supported & new FY03 funds budgeted

Remote Sensing Cooperative Agreement

This cooperative agreement funded a collaborative effort between the OSRI and NOAA to develop new methodologies for ecosystem assessment with LIDAR. Funding for this project was terminated after FY02. FY03 funds are to complete two publications.

FY03 funding is \$25,000.

PWS Tide Height Data Collection*

The PWS Tide Height Data Collection project provides for the operation and maintenance of automated tide gauges in Esther Rock, Applegate Rocks, Chenega Bay, and Tatitlek. These telemetered autonomous instruments will contribute to the understanding of the physical dynamics of PWS and serve as a historical record.

FY03 funding for this project is \$15,000

PWS Meteorological Data Collection*

This project provides for the operation and maintenance of automated meteorological stations (wind speed, wind direction, temperature, relative humidity, & barometric pressure) at various points within Prince William Sound. Due to the strong geographic influence on meteorological conditions, lack of a systematic reporting system and sparse population these autonomous stations represent the most cost effective method of obtaining the necessary data for determining the movement and weathering of oil spills within PWS. Stations are sited at Nuchek, Pt. Pigot, Applegate Rocks, Chenega Bay, Tatitlek, Cordova and Grass Island.

FY03 funding for this project is \$15,000

Nowcast/Forecast Physical Atmospheric Modeling Project*

The Nowcast/Forecast (N/F) project is the primary initiative of the current OSRI research and development programs. For this reason, the funding for N/F development is split 50/50 between the Predictive Ecology and Applied Technology programs. The Nowcast/Forecast Atmospheric Modeling project was begun in FY2002 to integrate a Regional Atmospheric Modeling System (RAMS) within the numerical modeling suite OSRI has assembled for Preparedness, Prevention and Response within the major transportation corridor of Prince William Sound.

FY03 funding of this project is \$115,000

Nowcast/Forecast Physical Ocean Modeling Project*

The Nowcast/Forecast (N/F) project is the primary initiative of the current OSRI research and development programs. The goal of this project is to assemble new predictive and measurement tools for the specific physical and biological conditions and features of Prince William Sound. By working with the public, government organizations and private industry in the region, OSRI hopes to develop key features that provide valuable information and services to the region long into the future. Within the Applied Technology program area this effort is led by Dr. Christopher Mooers at the University of Miami. Dr. Mooers is implementing a Princeton Ocean Model (POM) for Prince William Sound.

In FY98, OSRI obligated \$300,000 per year for five years for N/F system development. FY03 budget for this part of the program is \$150,000.

Nowcast/Forecast Observational Oceanography Program*

The development of the N/F capability for Prince William Sound is ongoing in FY03. Recognizing that the numerical models that were developed and/or implemented by the SEA program are relatively new applications, there will be a long-term effort to evaluate and improve their predictions through a variety of observations and field tests. This effort is lead by Dr. Shari Vaughan, principal investigator of the physical oceanography observational program at the Prince William Sound Science Center.

In FY98, OSRI obligated \$300K per year for five years for N/F system development. Observational oceanography is the research component of this project. The FY03 budget for this program component is \$150,000.

Intertidal Resources at Risk to Oil Spill*

This continuing project examines on large spatial and temporal scales the effects of biotic factors, primarily predation by shorebirds, crabs and flatfish, on the Copper River Delta's benthic marine invertebrates. The Copper River Delta's intertidal communities are vulnerable to oil spills from offshore tankers. This study is being conducted by Dr. Mary Anne Bishop of PWSSC, Dr. Sean Powers of the University of South Alabama, and Dr. Pete Peterson of University of North Carolina.

Funding for this item in FY03 is \$100,000.

Zooplankton Monitoring*

The SEA program found that Neocalanus copepods and pteropods represent the bulk of forage for planktivorous fishes (herring, walleye pollock, salmon fry, etc.) during the PWS spring bloom. Given the importance of zooplankton as forage for dominant fishes and their risk due to oil spills, OSRI committed funds to initiate long-term monitoring of

their population. FY03 includes continued funding for Dr. Richard Thorne's acoustical monitoring program through the PWSSC.

Funding for this item in FY03 is \$75,000.

Herring and Pollock Monitoring*

The SEA program found Pacific herring and walleye pollock to represent the bulk of the forage for piscivorous wildlife in the Sound in addition to supporting independent commercial fisheries. Given their importance as a commercial resource, their position as the dominant fish in the ecosystem and their trophic position as forage fishes for piscivorous wildlife, all of which are at risk to oil spills, OSRI will commit funds to the initiation of long-term monitoring of their biomass. Monitoring will be conducted using the advanced acoustic technologies developed during the SEA program.

Funding for this item in FY03 is \$75,000.

Carryover Projects – Previously supported and continuing with prior year funds (no additional funds required from FY03)

Three Dimensional Oil Dispersal Simulation (OSCAR)*

This project funds SINTEF, a Norwegian non-profit research corporation, in adapting their Oil Spill Contingency and Response (OSCAR) model for Prince William Sound. OSCAR utilizes a Princeton Ocean Model (POM) for ocean current modeling. The OSCAR system consists of an oil weathering model, a fates and effects model and a tactical response model. All three components interact within the same GUI (graphical user interface) based on a Windows NT platform. The oil weathering model in OSCAR separates crude into 30 components and pseudo-components for modeling in three dimensions in comparison to other models which separate crude into 4 to 6 components/pseudo-components. The advanced chemical characterization of plumes is prerequisite for accurate net environmental benefit analysis. OSCAR is anticipated to be utilized in the OSRI Dispersion Impact Analysis project.

No new FY03 funding anticipated. This project received \$171,000 in FY00 funds.

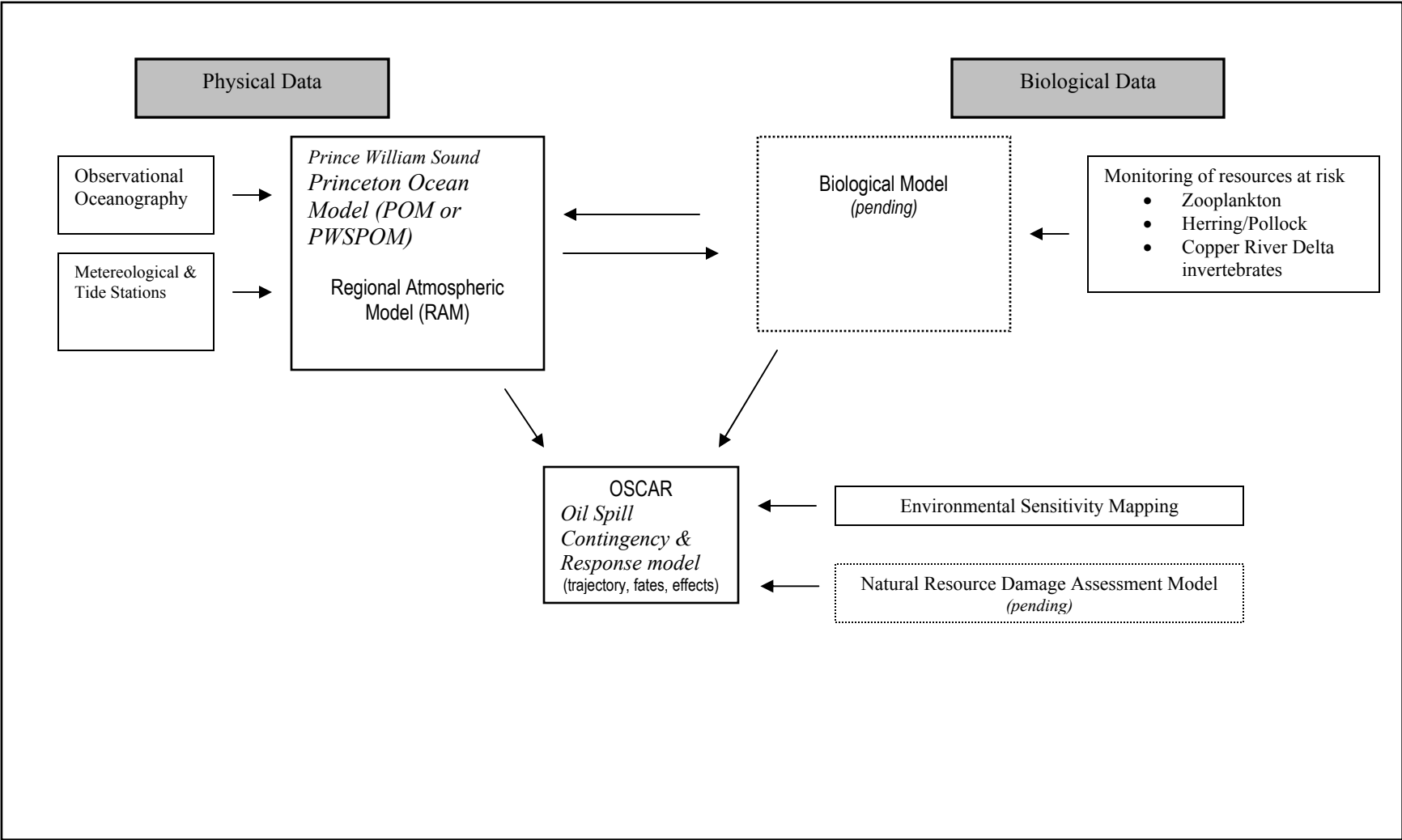
Projects previously budgeted – Contracts never awarded and funds lapsed **Coupling of OSRI Dominant Resource Monitoring with Predictive Numerical Models***

This project represents a first effort towards integrating the OSRI physical and biological modeling and monitoring efforts. Integrating biological components within the OSRI modeling effort is recommended in the National Research Council's review of the OSRI program. The nowcast forecast planning and biological modeling workshops scheduled in the summer of 2003 will further define the effort and develop a solicitation to cover the scope of work.

This project was budgeted to receive \$90,000 in FY02 funding; at the beginning of FY03, those FY02 carryover funds were deleted in anticipation of strategic planning and the results of the biological modeling workshop scheduled in spring/summer 2003.

***See Pg. 8, Flow Chart showing Project Linkages within Nowcast/Forecast System**

Project linkages within PWS Nowcast Forecast System



4.0 Programs – Goal 2 - Respond

Continuing Programs – Previously supported & new FY03 funds budgeted

Oil and Ice “Think Tank”

Oil spills in ice environments were the central focus of a workshop co-sponsored by the OSRI in April of 2000. The development of an Oil & Ice research plan for the Arctic and sub-Arctic is central to OSRI’s legislated mandate. This project will fund gathering experts within this field for a “think tank” to develop a prioritized R&D plan for prevention, planning and response to oil spills in ice prone regions.

Funding for FY03 is \$25,000.

Geographic Information System for Living Resources at Risk to Oil

OSRI is cooperating in a five-year agreement with NOAA-HAZMAT for completion of the Alaska coastal GIS effort. In previous years, environmental sensitivity index maps have been completed for the Prince William Sound, Southeast Alaska, and Northwest Alaska. Work is ongoing for the Yukon-Kuskokwin Delta region and future plans are to proceed to the Bristol Bay and Chukchi Sea regions. Additional funds to complete these regional mapping projects are contributed by non-profit associations, municipalities and private corporations.

FY03 budget for this area is \$60,000.

Carryover Projects – Previously supported and continuing with prior year funds (no additional funds required from FY03 budget)

Dispersion Impact Analysis

This project expands upon OSRI’s efforts in oil spill fate and effects modeling and ecosystem resource monitoring and modeling. Utilizing the OSCAR2000 for PWS OSRI will seek to establish an impartial steering committee of recognized experts in the diverse group of science disciplines that touch upon oil spill fate and effects to conduct an analysis of the relative impacts of dispersed and non-dispersed oil releases under varying conditions. The preliminary Workshop is scheduled January 10, 2003.

This project was budgeted at \$150,000 in FY02 funding; \$11,985 of those FY02 funds were contracted. The remaining FY02 funds were reduced to \$25,000 for additional workshop related costs in FY03.

PAH Field Monitor Development

This project funded the development of a backpack-size, portable, reagentless Polycyclic Aromatic Hydrocarbon (PAH) detection sensor. Laboratory tests of the system have been positive and shown strong analytical precision in the unit. The developer and contract awardee, Arizona State University, plans to demonstrate the unit in Alaska during late spring or early summer 2003.

No new FY03 funding anticipated. This project received \$45,000 in FY00 funding.

Ice Detection in PWS

The Prince William Sound risk assessment identified ice within the tanker lanes as representing the highest risk factor for future oil spills within the sound. The ice detection project, spearheaded by Prince William Sound Regional Citizens’ Advisory Council, seeks to mitigate this hazard by providing advanced detection and warning of

the presence of ice to tankers transiting the sound. By establishing a radar station on Reef Island, the ice detection project will enable radar coverage of Columbia Bay, the predominant source of glacial ice, and critical portions of the upper sound tanker lanes. *No new FY03 funding anticipated. This project received \$100,000 in FY00 funds.*

5.0 Programs – Goal 3 - Inform

Continuing Programs – Previously supported & new FY03 funds allocated **K-12 Environmental Science Education Programs**

Included within this program is ongoing support and expansion the award winning “Science of the Sound” project in Prince William Sound. Twenty-five thousand dollars is dedicated towards this multi-faceted education project incorporating hands-on classroom teaching, outreach trips to regional villages and other remote communities, and a series of summer camps for a variety of age groups. OSRI would like to establish additional working partnerships with other regional organizations to establish and extend similar programs to the greater community affected by the EVOS event.

The FY03 budget for this program is \$35,000.

Graduate Level Fellowships

This is an open BAA for grants supporting graduate fellows working on projects related to the OSRI mission. The fellowships are available on a yearly basis. Fellows must be involved in a study program in the area of relevance to Arctic and sub-Arctic oil spills.

The FY03 budget for this program is \$100,000.

Student Internships

This is an open BAA for grants supporting high school and college undergraduate students for assisting in research related to pollution in the marine environment.

Internships are available on a monthly basis.

The FY03 budget for this program is \$10,000.

OSRI Website

Support for upgrading the OSRI web site and providing initial maintenance funds.

The FY03 budget for this program area is \$15,000.

Communication and Extension Services

This funding supports public dissemination of OSRI’s scientific and educational information. This includes the publication of OSRI’s newsletter.

The FY03 budget for this area is \$7,500.

Annual Report

The OSRI will contract for a Report that details the programs executed by the OSRI in FY01 and FY02, and provides a summary financial status report. This report serves as a document of recording and evaluating the process of the OSRI program.

The FY03 budget for this area is \$10,000.

Carryover Projects – Previously supported and continuing with prior year funds (no additional funds required from FY03)

Science Planning Workshops

OSRI has maintained an open BAA for proposals to hold science planning workshops that tackle difficult issues in the region by bringing together international groups of scholars, researchers, managers, developers and the public to review, discuss and plan the direction of research and management in the region.

No new FY03 funds allocated for workshops, although \$50,000 is allocated for two specific workshops listed above (Nowcast Forecast Planning and Biological Modeling).

6.0 Programs - Projects of Opportunity

FY03 Projects of Opportunity

In FY00, the OSRI Advisory Board first supported a line item to support Projects of Opportunity. In FY01 these funds culminated in OSRI's participation in the Ice Detection project. The continuation of Projects of Opportunity enables OSRI to operate in an efficient and proactive manner in response to promising new proposals within a limited funding window. In FY03, these funds were dedicated for the search process, advertising, and moving costs to recruit OSRI staff.

Funding for this item in FY03 is \$50,000.

7.0 Science Director

Technology Coordinator *(Position redefined and retitled in spring 2003 to Science Director)*

Funding of this position was established in FY99 to continue through FY06. This position serves as the science manager providing leadership and oversight of the OSRI R&D program and is a programmatic expenditure.

Funding for FY03 is \$107,700.