Office Of
MARINE POLLUTION ASSESSMENT

PLAN for FY 1982-1986

Director, R. Lawrence Swanson

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U.S. DEPARTMENT OF COMMERCE
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Plan for Fiscal Years 1982-1986

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NOAA, Office of Research and Development,
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Preface

The purpose of this document is to present an overview of OMPA, outline the program's strategic goals and objectives, and describe its organization and management procedures. Development of research objectives and establishment of the technical approach to obtaining these objectives are not contained in this document. A separate OMPA Program Plan defines OMPA's multi-year research objectives; an OMPA Technical Plan describes the technical implementation of the activities in the Program Plan.

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EXECUTIVE SUMMARY

The Office of Marine Pollution Assessment (OMPA) has prepared this plan to outline its strategic goals and objectives in response to its responsibilities to serve as a focal point for certain activities assigned to NOAA by the National Ocean Pollution Planning Act of 1978.

The goals and objectives of the OMPA Marine Pollution Program are based on guidance provided by the Federal Plan for Ocean Pollution, Research, Development, and Monitoring, fiscal years 1981-1985, and by NOAA's Marine Pollution Program Plan, fiscal years 1982-1986. The Federal Plan establishes three broad areas for which policy must be developed at the Federal level: ocean resource use, ocean waste disposal, ocean conservation. The Federal Plan identified objectives dealing with effects of ocean use, waste disposal management, strategic assessment, habitat protection, and spill response assessment; it also outlined priority research, development, and monitoring needs for specific segments of the U.S. coasts and the Great Lakes. Priorities and needs for attention by the Federal marine pollution program are discussed in relation to 1) marine waste disposal, 2) marine mining, 3) marine energy, 4) marine transportation, 5) accidental discharges of oil and hazardous materials, 6) coastal land use, and 7) ocean pollution assessment and management of cumulative effects, 8) monitoring, 9) development of measurement methodologies, and 10) quality assurance.

In response to the Federal Plan and in conformance with the NOAA mission, legislative mandates, and special capabilities, the NOAA plan identifies six marine pollution goals. Because of OMPA's broad responsibility and coordination role within NOAA, these goals are the basis for this plan.

The OMPA Marine Pollution Program is intended to be relevant to ocean-use management decisions and is structured around an ocean-use management model which links human activities with environmental and ecological consequences and couples both with the decision process. The model specifically recognizes that judgmental processes involve not only scientific understanding of the consequences of human activities, but also the economic and social realities, which play key and often overriding roles. The OMPA advocates a strategy whereby all elements of the decision process within NOAA's mandated responsibilities are considered. The purpose of providing scientific information will be to anticipate and to minimize the adverse consequences attributable to the various facets of ocean-use.

The OMPA program is designed to promote a balance between use of the ocean and the protection and conservation of the ocean and its living resources. The types of pollution-causing ocean-use activities are several and varied (disposal of a variety of wastes, routine and accidental discharges from transportation, mining, and energy extraction, etc.). While the OMPA program encompasses all of them, resource limitations require careful assessment of priorities and needs. OMPA research priorities are defined in its Program Plan.

To implement its program, OMPA has established a headquarters office to provide overall guidance, coordination, and long-term planning; four regional offices to provide definition of needs and priorities, information transfer, and user interaction; an operational office to manage all NOAA-funded research, development, and monitoring activities within OMPA; a separate office in Alaska to manage the OCSEA Program; and a support services office for publications, data and information management and administrative services. OMPA has established planning, reporting, and review procedures to facilitate effective implementation of the activities for which OMPA is responsible.

I. PURPOSE, AUTHORITY

A. Purpose

The National Oceanic and Atmospheric Administration (NOAA) established the Office of Marine Pollution Assessment (OMPA) in response to the National Ocean Pollution Planning Act of 1978 (P.L. 95-273). This Act directs the Administrator of NOAA, in consultation with the Director of the Office of Science and Technology Policy of the Executive Office of the President, and other appropriate Federal officials, to prepare and update biennially a comprehensive five-year plan for the overall Federal effort in ocean pollution research and development and monitoring (Section 4). It further directs NOAA to establish a comprehensive, coordinated, and effective ocean pollution research, development, and monitoring program within the Agency (Section 5), and to provide financial assistance for research and development and monitoring projects or activities which are needed to meet priorities of the five-year plan, if these are not being adequately addressed by any Federal department, agency, or instrumentality (Section 6). Finally, the Act directs that NOAA should ensure that results, findings, and information regarding Federal ocean pollution research, development, and monitoring programs are disseminated in a timely manner and useful form to Federal and non-Federal user groups having an interest in such information (Section 8).

Responsibility for the implementation of Sections 5 and 6 of the Act was delegated to the Assistant Administrator of the Office of Research and Development (AA/RD) on October 2, 1978 (NOAA Circular 78-78). The AA/RD in a memo, dated November 8, 1978, established the Office of Marine Pollution Assessment (OMPA) within RD, and directed the office to 1) serve as a focal point within RD for all activities that are directly responsive and supportive of P.L. 95-273, and 2) to provide coordination within NOAA for the development and implementation of integrated marine pollution research, development, and monitoring programs in response to national needs and priorities identified in the 5-year Federal Plan.

The OMPA became an official NOAA organization on June 29, 1980, when its establishment was announced in NOAA Circular 80-47.

B. Authority

1. NOAA Handbook

The overall responsibilities of OMPA are described in the NOAA Organizational Handbook as follows:

> "Provides the focus for and coordinates NOAA's programs and activities in marine pollution research, development, monitoring, and assessment. Provides the interface between NOAA programs and the NOAA staff office charged with developing the Comprehensive Federal Plan Relating to Ocean Pollution. Develops and implements comprehensive, integrated, and continuing programs to assess short-term

and long-term impacts of pollutants and other people-induced changes of marine ecosystems. Disseminates results developed from such programs to appropriate agencies and persons, and provides advice upon request. Ensures that results, findings and information regarding ocean pollution research and development and monitoring programs are disseminated in a timely manner and useful form. Implements research necessary to design monitoring programs in marine environments. Provides information on pollution impacts, alternatives, and mitigating measures for resource management decisions when marine ecosystems are subjected to pollution or people-induced alterations. Discharges those management functions delegated to the Assistant Administrator for Research and Development related to marine pollution. Recommends and advises the Assistant Administrator for Research and Development on policy, programmatic priorities, emphasis and direction, and other issues concerned with marine pollution and its effects."

2. Legislation and Budget Authority

The OMPA is assigned through legislation, budget authority, or delegation of authority, the management responsibility for the following major program areas:

a) National Ocean Pollution Planning Act of 1978 (P.L. 95-273).

- Development of a comprehensive, coordinated and effective NOAA program for ocean pollution research, development and monitoring (Section 5).

- Financial Assistance for the conduct of research, development, and monitoring investigations identified as high priority needs where investigations are not being conducted by other Federal programs (Section 6).

- Analysis, Synthesis, and Dissemination of the results, findings, and information regarding ocean pollution research, development, and monitoring being conducted by the Federal government.

b) Marine Protection, Research, and Sanctuaries Act of 1972 (P.L. 92-532).

- Conduct a comprehensive and continuing program of research and monitoring regarding the effects of dumping of waste materials in the ocean (Title II, Section 201).

- Conduct a comprehensive and continuing program of research with respect to the possible long range effects of pollution and other man-induced changes to ecosystems (Title II, Section 202).

c) Marine Ecosystems Analysis Program (Budget Authority)

- Investigate the structure and key processes of marine ecosystems, estimate the range of their natural variations, and detect long- and short-term changes induced by pollution.

d) Hazardous Materials Response Project (Budget Authority/ National Oil and Hazardous Substances Pollution Contingency Plan, and The Comprehensive Environmental Response, Compensation, and Liability Act of 1980; P.L. 95-10).

- Coordination of the scientific response and assessment of damage resulting from the accidental discharge of petroleum and other hazardous substances affecting the marine environment.

3. Interagency Agreements

In accordance with an Interagency Agreement between NOAA and BLM, OMPA manages a reimbursible research program entitled The Outer Continental Shelf Environmental Assessment (OCSEA) Program to provide an assessment of the environmental effects of oil and gas resource development on the Alaskan outer continental shelf.

4. Coordination Requirements

To be effective in fulfilling its role as coordinator of the NOAA marine pollution program, OMPA must provide for productive interactions among all groups concerned with ocean-use and pollution management. This requires that:

a) All OMPA activities must be coordinated and integrated where practicable.

b) The OMPA program must be responsive to NOAA's Marine Pollution Program Plan.

c) The OMPA must promote information exchange, coordination of programs and synthesis activities with other NOAA programs and the programs of other agencies.

d) The OMPA must establish regional coordination mechanisms through its regional offices.

The aspect of coordination within NOAA is addressed in the NOAA Plan. In essence, coordination will be fostered by the NOAA Marine Pollution Coordination Council, which is chaired by the Director, OMPA.

II. OMPA MARINE POLLUTION PROGRAM GOALS AND OBJECTIVES

A. Federal Plan Guidance

The Federal Plan for Ocean Pollution Research, Development and Monitoring, Fiscal Years 1981-1985 establishes three broad policy goals designed to contribute to the resolution of the apparent conflicts that exist among the various needs to use the oceans and their resources. These goals are formulated along the following themes:

1. Ocean Resource Use Policy

   Encourage the use of the oceans, estuaries, and Great Lakes as sources of food, energy, and minerals, and as media for maritime commerce in such a way that no significant impact to human health, productivity, or aesthetic quality results.

2. Ocean Waste Disposal Policy

   Consider, along with other options, the use of the oceans, estuaries, and Great Lakes as repositories for the disposal of waste material and as sources of thermal energy when it is determined that no significant impact to human health, productivity, or aesthetic quality would result.

3. Ocean Conservation Policy

   Preserve and enhance the productivity and aesthetic quality of the oceans, estuaries, and Great Lakes for the sustained yield of living marine resources and recreational opportunities.

The Federal Plan identifies objectives dealing with effects of ocean use, waste disposal management, strategic assessment, habitat protection, and spill response assessment, and defines priority research, development and monitoring needs for specific segments of the U.S. coasts and the Great Lakes. Priorities and needs are discussed in relation to 1) marine waste disposal, 2) marine mining, 3) marine energy, 4) marine transportation, 5) accidental discharges of oil and hazardous materials, 6) coastal land use, and 7) ocean pollution assessment and management of cumulative effects.

Information management, monitoring, quality assurance, and development of measurement methodologies are discussed separately because of their major supporting role in the overall pollution program.

Individual agency goals, objectives, and priorities are expected to be established in conformance with the Federal Plan, but with special emphasis on each agency's legislative mandates and capabilities.

B. The NOAA Marine Pollution Program Goals

The NOAA has a major role in the definition of the goals and objectives of the Federal marine pollution program. NOAA, therefore, recognizes the urgency of the national needs identified in the Federal Plan, and is committed to the attainment of the Federal program goals and objectives.

In conformance with the its mission, legislative mandates, and special capabilities, NOAA has adopted the following goals:

1. Provide scientific information to guide national policy decisions on marine pollution issues.

2. Provide leadership in planning and coordinating marine pollution research, development, and monitoring activities; in preparing and synthesizing results from such activities; and in disseminating information in a timely manner and in useful formats to all relevant users.

3. Develop sufficient understanding of marine ecosystems to provide a sound evaluation of the impacts of the use of the marine environment as a source of renewable and non-renewable resources.

4. Support efforts to prevent or mitigate the effects of accidental releases of oil and hazardous materials into the marine, estuarine, and Great Lakes environments.

5. Protect the integrity, productivity, and aesthetic quality of the marine, estuarine, and Great Lakes systems from unacceptable ocean use practices and enhance already degraded systems by recommendation of possible actions leading to mitigation and/or restoration.

6. Document and evaluate the status and trends of source loadings, ambient levels, and biological accumulations of critical pollutants and the probable effects of these pollutants on the ecosystem and on human welfare.

C. OMPA Objectives - FY 82-86:

The following highlights the role and the specific objectives for which OMPA is responsible:

NOAA GOAL 1: Provide scientific information to guide National policy decisions on marine pollution issues.

OMPA ROLE:

The OMPA, in conjunction with other MPE's, as appropriate, coordinates efforts to guide national pollution policy decisions by providing assessments of past, on-going, and proposed ocean-use activities. Applying its scientific and technical competency, strategies are developed to predict and determine the consequences of proposed and on-going ocean-use. In this process recommendations are made on specific ocean-uses, including methods, place, and timing of ocean-use and alternative ocean-use practices.

OMPA OBJECTIVES - FY 82-86:

1. Prepare draft NOAA policy document for selected major ocean-use issues.

2. Conduct analyses of the existing marine pollution regulatory framework and its application to specific ocean waste disposal activities.

3. Prepare assessment reports describing impacts resulting from past, on-going and proposed ocean dumping activities.

4. Recommend alternative source control or disposal strategies, based on knowledge of cumulative pollutant impacts and comparative assessment of risks.

5. Develop site selection guidelines for disposal of selected waste materials.

6. Prepare comprehensive synthesis and evaluation reports on the documentable environmental impacts from OCS oil and gas development, using areas such as Alaska, North Sea, Gulf of Mexico, and Southern California as case histories.

7. Prepare an assessment report on the documentable effects of the Alaska Pipeline Terminal operation on the environment and resources of Valdez Arm.

8. Prepare assessment reports on the impacts resulting from disposal of contaminated dredged material, with evaluation of alternative disposal practices in selected geographic regions.

9. Prepare an assessment report describing the known and potential consequences of production and transportation of halogenated organic chemicals in the Gulf of Mexico.

10. From a systems perspective, define the efforts and concerns associated with ocean disposal of nuclear wastes, and prepare issue paper defining possible NOAA role in any future national program on subseabed disposal of nuclear waste.

NOAA GOAL II: Provide leadership in planning and coordinating marine pollution research, development, and monitoringactivities; in preparing and synthesizing results from such activities; and in disseminating information in a timely manner and in useful formats to all relevant users.

OMPA ROLE:

The OMPA assists the office delegated the responsibility for coordinating the Federal marine pollution program by organizing and actively participating in planning, information exchange, and review

activities. OMPA has the lead in the coordination of all marine pollution research within NOAA. The OMPA Director serves as chairman of the NOAA Marine Pollution Coordination Council, which is the mechanism for this function. In addition, OMPA maintains the marine pollution project inventory information for NOAA, which is required for the analysis of the Federal program.

The OMPA will promote synthesis activities utilizing not only OMPA and NOAA information, but also information obtained by other Federal agencies which reflect on national pollution issues.

OMPA OBJECTIVES - FY 82-86:

1. Provide the chairman and major staff support for the NOAA Marine Pollution Coordination Council.

2. Coordinate the preparation of an updated NOAA Marine Pollution Program Plan;

3. Prepare marine pollution sections of an Atmosphere and Marine Quality Assessment Plan.

4. Prepare an updated OMPA Program Plan for comprehensive coordinated program on high priority marine pollution issues;

5. Obtain regional input and prepare regional issue analysis reports.

6. Define and coordinate the development of major synthesis reports on national pollution issues.

NOAA GOAL III: <u>Develop sufficient understanding of marine ecosystems to provide a sound evaluation of the impacts of the use of the marine environment as a source of renewable and non-renewable resources.</u>

OMPA ROLE:

The OMPA will continue to study critical ecosystems, their natural variations, and the short- and long-term effects of polluting activities on the environment. Risks to the environment will be assessed in terms of social, ecologic, and economic costs and benefits for selected ocean uses. Existing risk assessment techniques will be adapted and new ones developed as needed so that OMPA can evaluate ocean uses and alternatives and make scientifically sound recommendations to management and regulatory authorities. This risk assessment approach will be applied where critical ocean-use decisions must be made over the next few years. Prototype studies will be designed to identify ocean resource use compatibilities and conflicts, develop multiple use management strategies, formulate cost-benefit analyses for the various management options, and recommend optimal strategies to ocean use managers.

OMPA OBJECTIVES - FY 82-86:

1. Develop understanding of fundamental ecosystem processes which will enable NOAA to:

   a. Prepare interim indices of unacceptable ecological impacts resulting from introduction of contaminants;

   b. Define recovery rates following reduction of contaminant input or removal of existing contaminant reservoirs;

   c. Prepare a comprehensive conceptual model of physical processes and their interaction with contaminants;

   d. Prepare reports on specific, key environmental processes controlling contaminant distribution and impact;

2. Design and test prototype assessment strategies for predicting biological effects with consequences at the population level from selected ocean waste disposal strategies;

3. Develop an accurate method for determining sources and levels of pathogenic organisms in coastal environments with emphasis on human safety.

NOAA GOAL IV: <u>Support efforts to prevent or mitigate the effects of and assess damages resulting from accidental releases of oil and hazardous materials into the marine, estuarine and Great Lakes environments.</u>

OMPA ROLE:

An active OMPA program of scientific study and spill response serves to increase protection of the marine environment from spills of oil and other hazardous materials. This scientific program aids the response effort by identifying environmental resources which warrant extraordinary protective efforts, determining the potential of a pollutant to cause damage, forecasting the pollutant's distribution and composition with time, recommending alternative cleanup, mitigation, and containment strategies, and assessing the damages resulting from such an incident. These efforts will provide information pertinent to decisions affecting marine transportation and offshore development, and which is critical in reducing regulations of commercial activity which may have resulted from an effort to compensate for lack of knowledge.

OMPA OBJECTIVES - FY 82-86

1. Improve capability to promptly respond to spills of any hazardous material, and to participate in simultaneous multiple spill incidents.

2. Establish Scientific Support Coordinators in parallel with U.S. Coast Guard Districts;

3. Complete Environmental Sensitivity Index maps for high-risk regions of U.S. coast;

4. Provide on-scene assistance at spills of oil, other hazardous substances, and designated uncontrolled waste sites;

5. Provide DOC/NOAA representation on Regional Response Teams.

6. Develop simplified damage assessment procedures that will determine long- and short-term impacts, replacement value, use value, and ability of ecosystems or resources to recover;

7. Carry out applicable provisions of CERCLA.

NOAA GOAL V: Protect the integrity, productivity, and aesthetic quality of the marine, estuarine, and Great Lakes systems from unacceptable ocean use practices and enhance already degraded systems by recommendation of possible mitigatory and/or restorative actions.

OMPA ROLE:

OMPA seeks to understand the effects, both short-and long-term, of polluting activities on impacted ecosystems. Since the assessment of the marine pollution effects of a given ocean-use is inadequate unless alternatives are also analyzed in a comparable manner, a special effort will be made to evaluate alternatives for consideration by decision-makers.

OMPA also develops ocean-use alternatives leading to the enhancement of degraded environments. Whether the impacts occurred through lack of understanding, neglect, or necessity, it is in the best interest of the nation to upgrade these ecosystems, if possible. Through research efforts, OMPA recommends actions necessary to alleviate the stress upon selected ecosystems.

OMPA OBJECTIVE - FY 82-86:

Predict and test, in appropriate selected areas, the recovery of valuable living resources that will result from remedial actions undertaken in demonstrably contaminated areas.

NOAA GOAL VI: Document and evaluate the status and trends of source loadings, ambient levels, and biological accumulations of critical pollutants, and the probable effects of these pollutants on the ecosystem and on human welfare.

OMPA ROLE:

OMPA identifies the pollutants of greatest concern, and determines the concentrations at which these pollutants and their transformation products cause unacceptable environmental effects. Regulatory decisions on permissible exposure levels for the ecosystem can be made when the acute, chronic, bioaccumulative and synergistic effects are documented for various pollutants.

Aspects of these efforts (compliance monitoring, trend assessments, effects studies, etc.) currently are conducted in NOAA and other agencies. These programs and studies generate information geared toward impact assessment. OMPA will evaluate these data to determine the status of ecosystem understanding, and where additional data is required. OMPA will analyse and synthesize data from existing Federal, state, and local programs, and develop improved techniques to be recommended for trend-assessment monitoring. OMPA synthesis of these research and monitoring efforts will result in assessments which will warn ocean use managers of imminent harmful impacts and will provide a long-term data base for impact evaluation and forecast. OMPA will also actively participate in the planning, coordination, synthesis and information dissemination activities of regional monitoring programs.

OMPA OBJECTIVES - FY 82-86:

1. Develop effective regional monitoring approaches which will detect unacceptable impacts and indicate causative contaminants and sources and which will lead to development of management strategies;

2. Assist and participate in the assessment of regional pollution conditions, obtained through monitoring programs.

3. Prepare synthesis reports on historical trends and current status of coastal pollution for selected regions.

III. CONCEPTUAL FRAMEWORK OF THE OMPA PROGRAM

The scope of the OMPA program embraces the goals and objectives of the NOAA marine pollution program: "... expand understanding of the marine environment and improve the scientific information necessary for decisions relating to all aspects of ocean use." The emphasis indicates OMPA's intent that this program be relevant to ocean-use management decisions.

The OMPA program responsibilities, organizational detail, and research emphases respond to the NOAA marine pollution program objectives, using the priorities of the NOAA and Federal plans.

A. Ocean-Use Management Model

In order to provide scientific information and assessments relevant to decisions needed to manage the various uses of the ocean, the OMPA program will consider all aspects of ocean-use management. This concept may be

depicted conceptually by an ocean-use management model (Figure 1), which links man's activities with environmental and ecological consequences, and couples both with the decision process. Although the model rather simplifies the complex ocean-use management process, it emphasizes the key elements that affect man's activities in terms of ocean-use.

The model specifically emphasizes the "judgmental process," which involves not only the scientific understanding of the consequences of man's activities, but also the economic and social realities which, in fact, play the key role in today's decision processes. In addition, the model recognizes that our scientific endeavors must be directed toward the understanding of the consequences of man's activities, and that for this knowledge the ecological and environmental processes must be understood. The knowledge of the specific effects of specific polluting activities is the fundamental information necessary for the effective control of the unacceptable impacts of marine pollution.

Scientific information, to be relevant to real-life situations, must incorporate understandings of the options available for ocean-use and pollution control. Also, it must deal with society's perceived preferences and the economic implications of ocean-use options. The model highlights this aspect of the ocean-use management process, and also the feed-back loop from the decisions back to man's activities. In this latter part of the loop the role of science is to assist management to verify or refute the effectiveness of the corrective control measures that were implemented to reduce adverse ocean-use impacts.

The OMPA program advocates a strategy whereby ocean-use alternatives and their projected environmental and ecological consequences are established to provide technical information to support effective management decisions which anticipate and minimize adverse consequences.

B. Approach

The fundamental purpose of ocean-use management is to create a balance between the use and the protection and conservation of the ocean and its resources. Depending on the particular use of the ocean, adverse impacts may include hazard to human health, harm to living resources and their habitats, hinderance to other uses such as fishing, and impairment of water quality causing a reduction of its recreational and aesthetic amenities. Usually a combination of these consequences occurs.

The ocean-use management model (Figure 1) defines an approach for OMPA to address the ocean-use - ocean conservation equation. The model directs the OMPA program to:

1. Identify the most critical problems;

2. Determine the management alternatives;

3. Examine the environmental and ecological processes involved in connection with each of the alternatives;

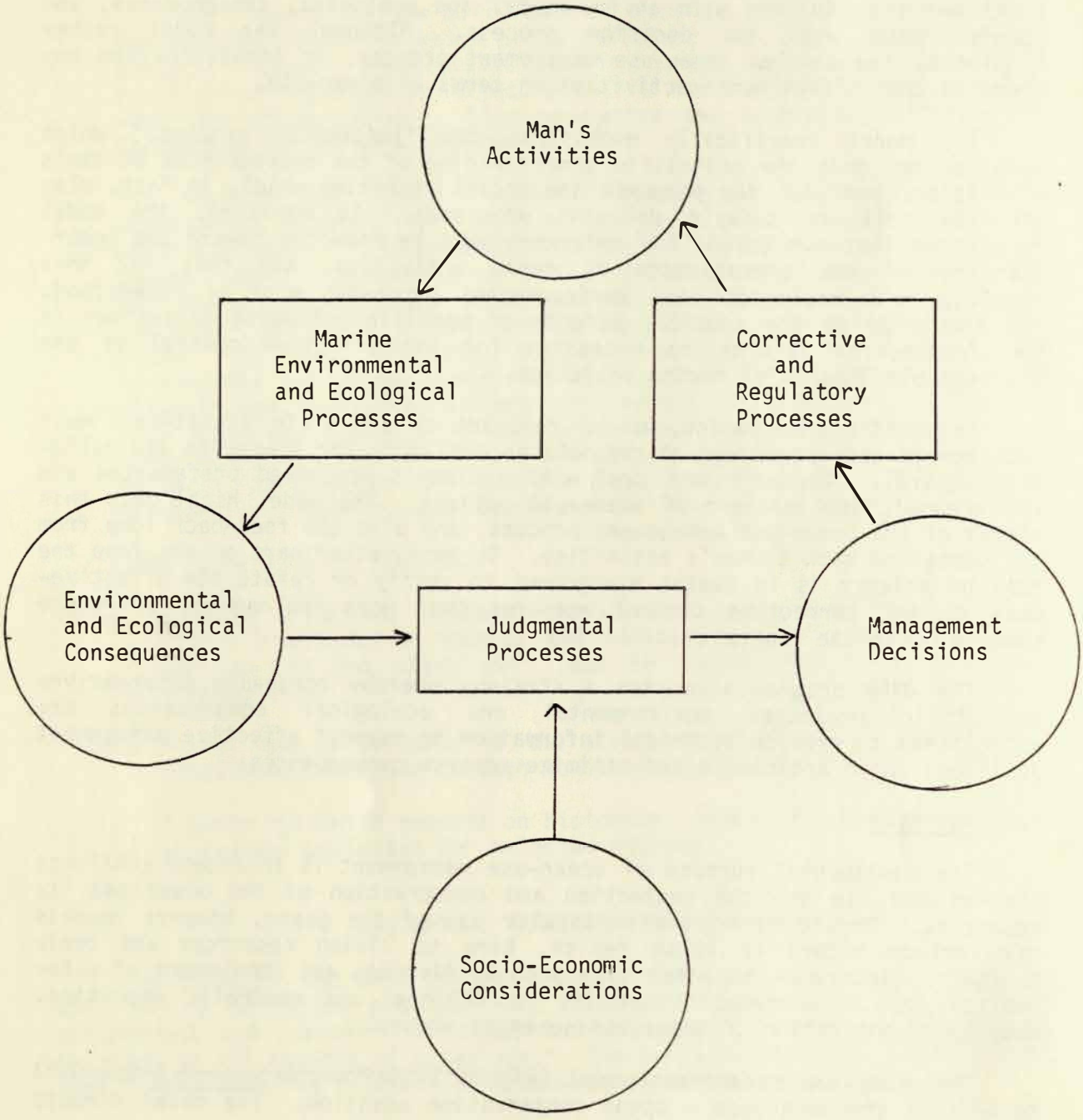

Figure 1. Ocean-use Management Model.

4. Identify and predict the potential consequences of each alternative;

5. Assess the risks involved to critical environmental (including human) targets;

6. Present management decision options based on consequences, risks, and socio-economic constraints, and

7. Design a strategy to assess the effectiveness of the selected ocean-use option.

C. Programmatic Emphasis

Using the marine pollution goals defined previously, OMPA's programmatic emphasis will be focused on the major ocean-use activities. The pollution concerns associated with these activities are summarized in the following:

1. Marine Waste Disposal

One of the growing problems of our society is the disposal of waste materials created in large urban and industrial centers. The waste materials of concern include:

a. Sewage Disposal: The principal concerns with sewage disposal are human health risks caused by the direct transmission of human pathogens and the contamination of seafoods by toxic metals, synthetic organic compounds, and pathogens. Sewage effluents also contain oxygen-demanding organic substances and various forms of nutrients, nitrogen, and phosphorus, which may contribute to eutrophication and critical reduction of oxygen levels.

b. Dredged Material Disposal: It is necessary to maintain existing channels and to dredge new channels leading to our port facilities to maintain safety and to expand the capability to handle larger ships. Although the bulk of the dredged material is innocuous, in many highly polluted areas it contains harmful chemical constituents such as toxic metals, synthetic organics, oil, and grease. The open ocean disposal of these materials carries the threat of acute or chronic toxic effects on marine organisms and the potential contamination of human food resources.

c. Industrial Waste Disposal: Industrial wastes often contain harmful constituents, including synthetic organics, toxic metals, and oils. These are usually disposed in landfills, ocean dumped, discharged into coastal or inland waters via pipelines, or incinerated at sea.

d. Radioactive Waste Disposal: Exposure to radioactive substances poses environmental problems and threat to human health. Existing policies have discouraged the disposal of radioactive waste in the oceans. Terrestrial disposal, however, has many undesirable aspects and it is clear that the option of ocean disposal will receive increasing attention.

2. Marine Mining

The ocean-use category of marine mining includes oil and gas extraction; sand, gravel, and shell mining; and deep seabed mining of manganese nodules and polymetallic sulfide ores.

a. Oil and Gas Extraction: The environmental concerns related to oil and gas extraction from the Outer Continental Shelf (OCS) focus on the environmental impact caused by on-shore facilities development, long-term ecological effects of low-levels of petroleum hydrocarbon exposure, and on the effect of spills and blow-outs.

b. Sand, Gravel, and Shell Mining: All mining of sand, gravel, and shell now underway occurs in shallow coastal areas which are highly productive and which are also subject to impacts from other pollution. Mining operations disrupt benthic communities and increase turbidity. Extensive or long-term operations could cause far-reaching effects on productivity of nearshore marine habitats.

c. Deep-Seabed Mining: Deep-seabed mining involves the recovery of manganese nodules from the sea floor and their processing either at sea or at land-based facilities, and the recovery and processing of polymetallic sulfides. While benthic life is sparse in most of the deep ocean, the recovery time is extremely long. The biological activity surrounding vents is likely to be affected by any attempt to mine nearby polymetallic sulfide deposits. Disposal of processing waste from either floating or coastal factilities is also a major concern.

3. Marine Energy

Because of the high costs of imported and domestic oil and gas, alternative energy technologies have received considerable attention in recent years.

a. Ocean Thermal Energy Conversion (OTEC): The OTEC process utilizes the temperature differential between the warm surface waters and the cold, deep waters. The transportation of a large quantity of the bottom water to the surface will affect biota, because of the large difference in its thermal and chemical qualities. In addition, the effects of chemical biocides, required to prevent biofouling of the OTEC equipment, need to be investigated.

b. Other Energy Technologies: There are a number of other ocean energy technologies which have not been developed to the point to determine whether they are technically and economically feasible. These include ocean geothermal energy, energy from ocean currents, tidal energy, wave energy, biomass energy, salinity gradient energy, and offshore wind energy. All of these potential ocean uses involve the possibility of pollution effects on the marine ecosystem which will require assessment to permit rational decision making.

4. Marine Transportation

Environmental concerns associated with marine transportation involve the environmental implications of routine operational discharges. These take the form of waste disposal from the vessel itself, routine bilge pumping, and ballast discharges. Although these practices are subject to regulation by the Coast Guard, enforcement is a difficult problem. Effects may be significant in heavily utilized waters with poor circulation.

5. Accidential Discharges

Substantial amounts of oil and hazardous materials enter the marine environment as a result of accidental spills. Although the focus in the past has been on the cleanup and mitigation of spilled oil, the national concern is shifting toward the potential effects from spills of other hazardous materials. A large number of toxic materials are carried in marine transportation or handled by coastal facilities. Many are impossible to contain or clean up once they have entered the marine environment. The nature of their interactions and breakdown products are frequently unknown.

6. Coastal Land Use

Land use in coastal areas, whether it is agricultural or urban/ industrial development, can adversely affect the nearby marine ecosystem. Types of uses that cause pollution concern include:

a. Siting, Construction, and Operation of Coastal Facilities: Ports, power plants, sewage treatment facilities, dumps, refineries, mineral processing plants, seafood and lumber processing plants, and many other industrial activities develop in coastal areas because they benefit from marine transportation, large volumes of cooling water, living marine resources, or use of the ocean for waste disposal.

b. Non-Point Source Pollution: Non-point source pollution results from man's modifications of the terrestrial environment, which subsequently impact the ocean. Pollutants include sediment, pesticides, and fertilizers from agricultural areas, and debris, oil, grease, pathogens, and a variety of harmful chemicals from rural and urban areas which enter directly, by way of rivers or from atmospheric fall-out, into the sea. This is one of the major contributors of pollutants into the oceans, and it is the most difficult to control.

c. Hazardous waste dumpsites: Landfills have been used since the mid-1940s to indiscriminately dispose of toxic wastes. Many of these dumpsites are located within a short distance of marine waters, or of rivers and streams which lead directly to these waters. There is no assessment of either the flux of hazardous materials which may be leached from these dumpsites into marine waters, or the effects these leachates may be having on living marine resources. It is unlikely that EPA activities under CERCLA (P.L. 96-510) will alone fill these voids.

7. Ocean Pollution Assessment and Management of Cumulative Effects

Coastal regions are frequently impacted by more than one ocean-use activity. One of the most challenging problems is the linking of pollutants found in the environment or in the biota to specific sources which may be controlled. Also, particularly in cases of chronic low-level pollution, synergism may have important effects which are difficult to define. The additive impacts of multiple ocean uses is impossible to anticipate without a far better understanding of ecological processes than is now available. Unfortunately, regulations generally address the pollutant content of specific ocean uses and not the total from all uses. The management of this problem will require participation of all regulatory authorities in the affected regions.

8. Monitoring

To identify monitoring needs and priorities for the second Federal Plan, OMPA, together with the Ocean Pollution Monitoring Group (National Ocean Survey) and the Office Ocean Technology and Engineering Services (Office of Oceanic and Atmospheric Services), held six regional workshops. Priority monitoring and research needs from all workshops were consolidated and published under the title of "An Assessent of Great Lakes and Ocean Pollution Monitoring in the United States." This publication is Working Paper No. 7 of the next Federal Plan. The major conclusions from these workshops established a need for: 1) better coordination and information exchange among existing programs; 2) regional planning and program design; 3) improved data access and information dissemination; 4) the development of syntheses of monitoring data, and 5) an improvement of monitoring technologies. NOAA's role is to support the workshop findings by aiding regional coordination, planning, and data and information access. These roles largely will be shared between OMPA and the Environmental Data and Information Services (EDIS).

9. Development

The improvement of the effectiveness and reliability of existing technologies has been identified in the Federal Plan as a major national need. Marine pollution research is impeded by expensive and labor intensive techniques for chemical and biological analysis. It is particularly desirable to acquire the ability to sense and quantify pollutants in the marine environment in near real-time. While OMPA is unlikely to undertake the development of new technology for financial reasons, it will be alert to innovative developments which will facilitate the accomplishment of its objectives.

10. Quality Assurance

Because of the large variety of measurement technologies employed in the marine pollution programs conducted nationwide, information about the quality of data and data products is a major national concern. Intercomparability of data obtained by a variety of organizations must be achieved via the inclusion of quality assurance information, the use of approved and standard analysis procedures, and

the use of standard measurement units. The OMPA programs have already established stringent quality assurance requirements and the expansions of these to other NOAA marine pollution programs is recommended.

Further, the Federal Plan recommends a high-level policy commitment from each agency to support quality assurance programs as discrete program elements in their marine pollution program. NOAA and OMPA will evaluate what additional actions are required to improve data quality and intercomparability.

IV. OMPA MANAGEMENT PLAN

A. Scope

The Assistant Administrators of the NOAA MLC's guide the emphasis and implementation of the marine pollution research, development, and monitoring programs. Specific policy guidance for OMPA is provided by the Associate Administrator for Research and Development.

Within OMPA, overall coordination and direction is accomplished by the OMPA Director, with recommendations from the OMPA Executive Council. In addition, a management staff establishes specific priorities, designs and manages scientific investigations, and the preparation of reports and other products. The underlying philosophy in the management of OMPA is to direct investigations toward specific pollution problems and products that are directly applicable to user needs.

B. Organizational Structure

The organization of OMPA is in transition from the previously established independent program components to an integrated program concept. This will permit a more efficient use of personnel; more effective use of resources; easier definition of research needs, gaps, and overlaps; better communications; and the establishment of a comprehensive, coordinated, and effective marine pollution program within OMPA.

The organizational structure of OMPA is presented in Figure 2.

C. Responsibilities and Interactions

1. The Office of the Director (OOD) will perform or oversee the full range of OMPA responsibilities. The Director is the conduit for official communication with higher management and other NOAA MPE's. The Director is the final authority on organizational assignments, resource allocation and personnel policy within OMPA.

2. The Program Planning and Evaluation Office (PPE) will perform the following functions in support of the Directorate:

   a. Develop and recommend long-range planning of comprehensive, integrated and continuing programs for research, development, monitoring, and assessment related to marine pollution and human-induced changes in marine ecosystems;

OFFICE OF MARINE POLLUTION ASSESSMENT

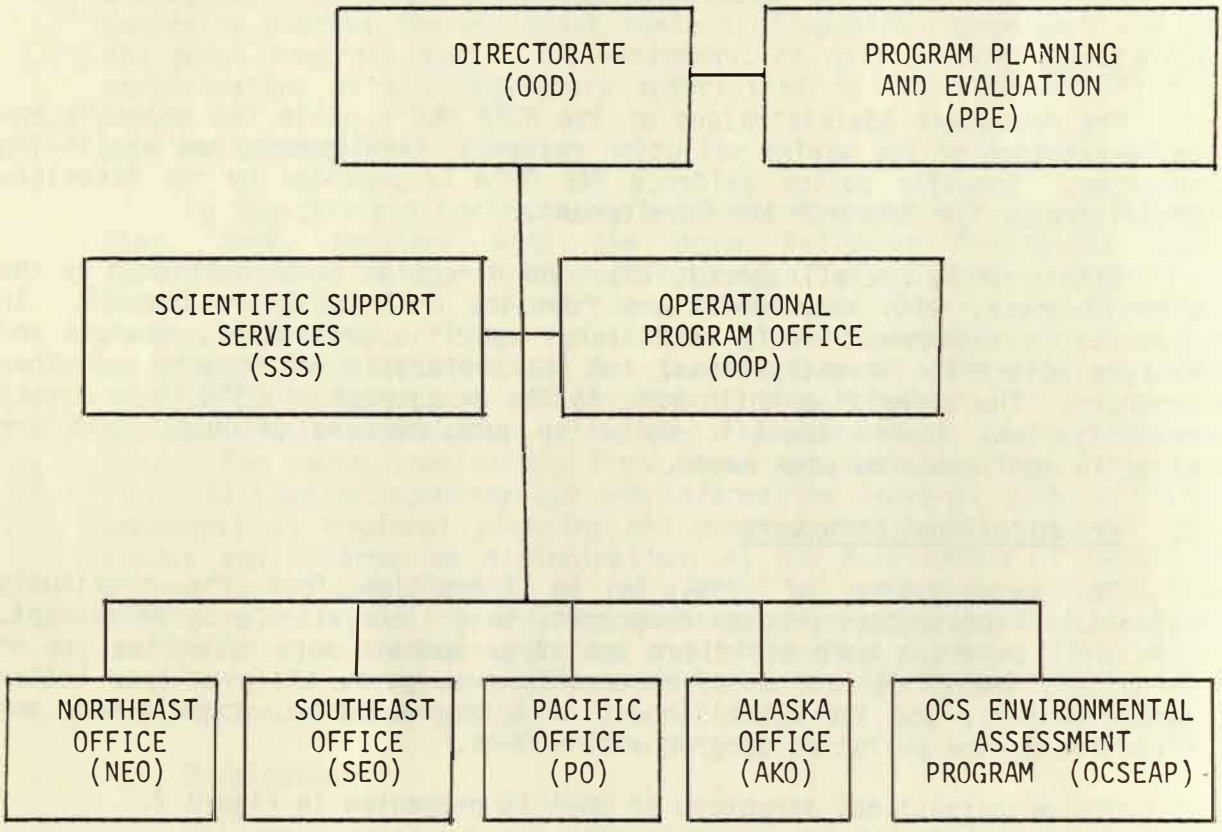

Figure 2. Organizational Structure

b. Coordinate review of and evaluation of OMPA and other NOAA marine pollution programs for responsiveness to national needs and priorities;

c. Evaluate results and products by examining the program synthesis and assessment efforts of program activities;

d. Maintain overview and coordination with OMPA programs, other MLC's and non-NOAA marine pollution programs, and serve as a point-of-contact on technical and management aspects of these programs.

e. Serve the Director, OMPA, by conducting special studies, performing tasks in support of the Director's Office, and providing information on a variety of technical and management issues involving OMPA, NOAA, and other marine pollution programs.

3. The Scientific Support Services Office (SSS) will perform scientific, technical, and administrative support services necessary to facilitate the OMPA mission. This includes, but is not limited to budgetary, procurement, personnel, publication and information management services.

4. The Northeast, Pacific, Southeast, and Alaska Offices (NEO,PO, SEO, AKO) will have the following responsibilities:

a. Maintain cognizance of research and monitoring related to marine pollution conducted within the region by all organizations, including NOAA, other Federal, state, and local agencies, universities, and industrial and private interests.

b. Provide assessments and syntheses of available data and information to address present or potential problems of regional interest.

c. Develop and maintain a broad understanding of regional marine pollution affairs for use in responding to policy inquiries by NOAA, requests for inputs to required reports or testimony to Congress, comments on environmental impact statements, and inquiries by decision-makers or the general public.

d. Provide the DOC/NOAA representative to Regional Response Teams for spills of oil or hazardous materials; make NOAA input to contingency plans.

e. Identify and define regional needs and priorities for marine pollution information for OMPA research, investigation by other NOAA organizations, and input to the Five-Year Federal Plan.

5. The Office of Operational Programs (OOP) will manage all of OMPA's research, development and monitoring projects. Commencing in FY 1982 it assumed management of the Ocean Dumping, Long-Range Effects, Financial Assistance, and Hazardous Materials Response

Programs. In FY 1983, it is planned that the OOP will assume management responsibility for OMPA's Puget Sound and Hudson-Raritan Estuary Projects.

The Office of Operational Programs will provide the mechanism whereby the short-term technical planning, program execution, and information synthesis of the operational program components will be integrated in order to develop a complementary, coordinated program which is oriented toward national needs. While OMPA's operational programs are to be centrally managed, the development of general program direction and the assignment of priorities remains a function of OMPA as a whole. The PPE and the regional offices will play a dominant role in the longer-term development of OMPA's research, development, and monitoring activities.

Where appropriate, the OOP will coordinate the information acquired through its activities with the information developed through the Outer Continental Shelf Environmental Assessment Program (OCSEAP).

6. The Outer Continental Shelf Environmental Assessment Program (OCSEAP) will retain its identity as the manager of the BLM-funded studies of the environmental implications of oil and gas development on the Alaskan outer continental shelf. The OCSEAP Office reports to the Director of OMPA.

D. OMPA Planning Documents

1. General. Planning is the process of deciding in advance what is to be done, how, when, and by whom. It involves the selection of objectives, the development of policies and programs, and the procedures for their accomplishment. In short, a plan is a predetermined course of action.

The purposes of planning are many. In general, plans are necessary to:

- Optimize Resource Use. Plans provide an explicit allocation of resources among alternative uses.
- Coordinate Activities. Plans will organize the activities of different organizations or projects to accomplish common goals. Schedules will be established to permit the accomplishment of objectives by cooperating elements of the organization.
- Inform Others. A written plan serves as a useful reference for management, staff, and clients regarding objectives, approach, schedules and expected products.
- Justify New Funding. A special case of informing others, a plan may propose needed actions and approaches to document the desirability and feasibility of new projects.

For most OMPA purposes a plan should be as brief and clear as possible. It must focus on presentation of the level of detail that is appropriate for its intended use and audience.

There is a hierarchy of plans ranging from major organizational plans to detailed task implementation plans. Some of the variables of plans are:

- Time. A plan may be for a period of one year or even less, and define the immediate course of action in detail. Long-range plans, 3 to 5 years, are usually appropriate for the definition of a broader framework for the solution of a particular problem.

- Level of Detail. A plan may be general, and may serve to define the goals, objectives, the purpose and urgency of a project, outlining only a general approach to particular problems. At the other extreme, a plan may define specific activities and assign tasks and schedules to individuals or organizations.

- Technical Level. A plan may be written for a non-scientific audience, such as the staffs of Congress, Office of Management and Budget or Department of Commerce. Alternatively, it can be so technical that it can be understood only by individuals expert in a particular scientific discipline.

- Justification. A plan may emphasize either the seriousness of the problem proposed to be solved and the effectiveness of the approach recommended, or the specific actions and their scientific validity required to achieve the desired result.

These variables have complementary aspects and suggest that a plan covering a long period has a lower level of detail than one for a shorter period, and that a plan oriented toward justification (sales) should have a lower technical level than one focused on project execution.

2. Description. OMPA Planning documents are summarized in Table 1. For more detailed information, refer to OMPA Letter No. 82-06.

E. Management Review and Reporting Procedures will be used to monitor program progress, identify potential problem areas, and establish priorities.

1. NOAA Program Review.

The scope, format, timing, and content of this review will be established in accordance with guidance from NOAA management.

2. OMPA Programmatic & Technical Reviews.

The reviews will focus on technical progress, accomplishments and problems, schedule status and problem areas, cost status and resource requirements.

PLAN	TIME PERIOD (YRS.)	PREPARED BY	APPROVED BY	CONTENT	PURPOSE
Operational Plans					
a) Program Plan (PP)	three to five	PPE	Director, OMPA	Objectives; technical approach; schedule; milestones; management strategy; resource allocations.	Define multi-year research objectives; establish program and general technical approach; justify effectiveness of approach.
b) Program Development Plan	three to five	PPE	Director, OMPA	Statement of problem; research needs; proposed technical approach; schedule and milestones; management plan; resources required.	Define objectives and justify expenditures of new programmatic resources.
c) Technical Plan	one	OOP	Director, OOP	Approach and rational; research unit descriptions; schedule and milestones; resource allocations.	Describe the technical implementation of the activities identified in the Program Plan.
Organizational Plans					
d) NOAA Plan	five	PPE	NOAA Administrator	Program goals; management plan; NOAA activities; schedule and milestones.	Describe interrelationships between research activities within NOAA elements.
e) OMPA Plan	three to five	PPE	Director, OMPA	Program goals and objectives; OMPA Organizational structure; OMPA management procedures.	Outline OMPA strategic goals and objectives; describe the OMPA organization and management procedures.
f) Regional Office Plans	one	Each Regional Office	Director, OMPA	Definition of regional concerns; objectives; schedule and milestones.	Outline regional pollution problems, objectives and priorities for regional office activities.

Table 1. OMPA Planning Document

3. OMPA Executive Council Meetings.

These meetings will be attended by the directors of the OMPA Organizational elements (Figure 2). Their purpose is to review and evaluate the OMPA marine pollution program and to recommend to the OMPA Director policies and courses of action for program formulation and implementation. Topics of major concern to the Executive Council will be:

a. The content and direction of the OMPA program.

b. The direction and priorities of the Office of Operational Programs.

c. The direction and priorities of the Regional Offices.

d. The degree of effectiveness in achieving program integration.

e. Identificaton of major marine pollution issues and related programmatic priorities.

4. Reporting Requirements

This section contains the basic review and reporting requirements which foster proper planning, program evaluation, and distribution of results of OMPA activities. Some of these requirements are imposed by Congress, NOAA, and the Office of Research and Development (RD). Others are established by OMPA to facilitate integration of program activities, planning, the development of products, and information flow both within and outside OMPA. Additional information on formats and content can be found in the OMPA Letter series.

a. Annual Report

OMPA is required by law to submit annual reports to Congress on activities conducted under Sections 201 and 202 of P.L. 92-532. To facilitate and simplify this reporting requirement, OMPA will prepare an Annual Report which will cover all of its programmatic activities. The Annual Report will summarize the past fiscal year's activities, and will provide an assessment of the status of major marine pollution issues for which OMPA has responsibility. The Annual Report will be organized in such a manner that achievements of individual programs can be identified. The OMPA Annual Report will be prepared by PPE; raw input will be provided by all programs no later than one month following the end of each fiscal year.

b. Annual Spending Projection

Each organizational element of OMPA will submit an annual spending plan as required by OMPA Letter No. 81-03. The spending plan will clearly identify budgets for each programmatic activity area and will contain a detailed breakdown of personnel and support costs.

c. Monthly Report

Each organizational element of OMPA will prepare a monthly activity report identifying significant events, milestones, and activities for the Director, OMPA. Detail should be sufficient to allow the development of OMPA monthly reports and other required responses to higher levels of NOAA management. A copy of the report should go to all other OMPA organizational elements as well.

d. NOAA Marine Pollution Program Inventory

The SSS will prepare an annual inventory of all NOAA marine pollution program activities. Software will be prepared to facilitate analyses of all programs by annual and cumulative expenditures, programmatic activity area, type of pollution problem, principal investigator, type of performing institution, etc., as needed, utilizing the OMPA Management Information System. This inventory should be prepared in cooperation with PPE and the NOAA Marine Pollution Coordination Council.

5. Technical Reports & Scientific Publications

a. Synthesis Reports

OMPA will prepare reports which summarize and integrate knowledge and understanding relative to important marine pollution problems. These reports will be prepared in advance of major decision dates and will be updated as needed to influence policy and guide selection of alternatives. The OOP and the Regional Offices will be jointly responsible for the majority of the OMPA synthesis activities.

b. Technical Publications

Scientists receiving OMPA support and OMPA scientific staff will be encouraged to submit their work promptly to reputable technical journals and to make presentations at appropriate scientific meetings. In addition, OMPA will sponsor a publication series which will consist of technical reports, technical memoranda, data reports, technical reviews, and principal investigator's reports of special merit. Guidance on the OMPA report series is provided in OMPA Letter 80-10.