

COUNTY OF SAN LUIS OBISPO

OFFSHORE ENERGY ELEMENT

ADOPTED BY
THE SAN LUIS OBISPO COUNTY BOARD OF SUPERVISORS
DECEMBER 15, 1992 - RESOLUTION 92-543

COUNTY OF SAN LUIS OBISPO

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PREFACE

Oil development has always been a part of California's history. Native Americans gathered asphaltum from natural seeps, as did Spanish explorers and settlers. Lamp oil was being produced in a state refinery as early as 1850. The first exploratory well drilled for oil was in 1861 although the first producing well was not drilled in the state until 1865. Onshore development progressed rapidly the next 30 years, and the first offshore well was drilled in state tidelands (within 3 miles of shore) off Santa Barbara in 1896. The first lease sale on California's outer continental shelf (OCS) was in 1963. While these were unproductive, the first OCS production came from leases sold in 1965.

San Luis Obispo County has had onshore oil development for most of the last 100 years. Numerous wells have been drilled throughout the county. Although many wells were dry, there are eight producing oil fields in the county, some of which extend into Kern and Santa Barbara Counties. The county also has an existing oil refinery and a petroleum products factory on the Nipomo Mesa, and numerous crude and oil products pipelines and pump stations, natural gas pipelines, tank farms and marine terminals. Development continues on the OCS and an onshore oil processing facility and associated pipelines were applied for and conditionally approved by the county but was rejected by the voters. Accelerated OCS development pressures are expected. Recognizing this, the county is taking advantage of existing experience and knowledge available from other areas where development is occurring by creating a policy document to guide the county. The Offshore Energy Element will help the county assess offshore projects and lease sales, develop policies for future positions, and be prepared to address potential future OCS related projects.

The element will serve several functions and can be used by the public and the oil industry as well as decision makers. It is an educational document presenting many aspects of offshore oil development and associated necessary facilities, as well as the potential interactions and impacts of these developments on the county's marine and terrestrial resources. It can serve as a guide to potential developers, presenting some of the county's concerns and policies. The element also focuses on the planning of facilities related to OCS development, and will be the first place to turn for policy direction.

This Offshore Energy Element has been prepared by the Energy and Natural Resources Division of the Department of Planning and Building. Due to the wide interest in the topic and the need to address all of the varied perspectives, a task force with representatives of the general public, environmental organizations, and the oil and gas industry was formed. The role of the task force was to act as a liaison to the public and industry in reviewing and commenting on elements of the plan as they evolved. The task force reviewed each chapter and attended meetings at which comments were provided to county staff and a variety of issues were discussed. The task force is to be congratulated for their persistence, expertise and ability to debate difficult topics in a constructive manner.

User's Guide for the Offshore Energy Element

The following table should be used to identify county policies in the Offshore Energy Element that may apply to a particular offshore oil and gas activity. On the reverse side is a table showing the various federal, state and local regulations as well as agencies which have a role in the review process.

User Interest	Applicable Policies	Page	Chapter	□
Lease Sale	1.5.1 Leasing: All Policies	I-3	IV	
	1.5.2 Biological: #1 and 3.	I-5	V	
	1.5.3 Fisheries: #1, 3, 5, and 6.	I-5	VI	
	1.5.4 Air Quality: #1, 2, and 3.	I-9	VII	
Geophysical Surveys	1.5.1 Leasing: #1, 2, and 3.	I-3	IV	
	1.5.3 Fisheries: #2, 3, 4, and 5	I-7	VI	
Exploration	1.5.1 Leasing: #3	I-4	IV	
	1.5.2 Biological: #1, and 3.	I-6	V	
	1.5.3 Fisheries: All Policies	I-6	VI	
	1.5.4 Air Quality: #1, 2, 3, 4, and 7.	I-9	VII	
	1.5.6 Supp/Crew: All Policies	I-15	IX	
Construct/Operation	1.5.1 Leasing: #1, 2, and 3.	I-3	IV	
	1.5.2 Biological: All Policies.	I-5	V	
	1.5.3 Fisheries: All Policies	I-6	VI	
	1.5.4 Air Quality: All Policies	I-9	VII	
	1.5.5 Onshore Fac: All Policies	I-14	VIII	
	1.5.6 Supp/Crew: All Policies	I-15	IX	
	1.5.7 Oil Spill: All Policies	I-17	X	
<p>The user should also consult the appropriate sections of the Local Coastal Plan, Land Use Ordinance, and other elements of the General Plan. These sections will provide specific information about the county's project review process.</p>				

**Table II-1
MAJOR AGENCIES, LAWS AND PERMITS INVOLVING
OFFSHORE OIL AND GAS DEVELOPMENT**

FEDERAL AGENCIES	LAW	REGULATORY AUTHORITY
Minerals Management Service (MMS)	Outer Continental Shelf Lands Act	Permit to Drill
National Oceanic and Atmospheric Administration (NOAA)	Coastal Zone Management Act (CZMA)	Consistency Certification
Environmental Protection Agency (EPA)	Clean Water Act	National Pollution Discharge Elimination System (NPDES)
Army Corps of Engineers (COE)	River and Harbor of 1899	404 Permit, Section 10 Permit
U.S. Fish and Wildlife Service, National Marine Fisheries Service	Endangered Species Act	Section 7 Consultation
All agencies must comply with NEPA	National Environmental Policy Act (NEPA)	Environmental Impact Statement

CALIFORNIA AGENCIES	LAW	REGULATORY AUTHORITY
State Lands Commission	Submerged Lands Act; CPRC, Div 6, Sec 6001; & OSPRA	Right-of Way/State Waters Lease Management of State Lands Inspection of Marine Terminals
Regional Water Quality Control Board	Porter-Cologene Act Water Code	National Pollution Discharge Elimination System (NPDES)
Department of Fish and Game	California Fish and Game Code	Stream Alteration Permit/ Oil Spill Emergency Response
Department of Transportation (CALTRANS)	Streets and Highway Code	Encroachment Permit
Coastal Commission	California Coastal Act	Coastal Development Permit
Air Resources Board	Air Pollution Control Laws	

LOCAL AGENCIES	LAW	REGULATORY AUTHORITY
County/City Government (Planning Departments)	General Plans, Local Coastal Plans, Zoning Ordinances	Land Use Permit/Coastal Development Permit, Conditional Use Permit. Building Permits
Measure A	Local Coastal Plan	Voter Approval of Onshore Facilities
Air Pollution Control District (APCD)	Clean Air Plan	Authority to Construct, Permit to Operate

CHAPTER I: INTRODUCTION AND POLICIES

1.1 Authority and Purpose

The Offshore Energy Element of the San Luis Obispo County General Plan is a policy document developed to enhance public awareness and participation in decision-making regarding offshore and related onshore oil and gas activities. It is intended to be an educational document which also provides a summary of county policy, suggests new policies, and offers clear direction for implementation. The information presented in the element is crucial to the understanding of local and regional issues related to development of offshore petroleum resources. An understanding of the technical basis of impacts is necessary to recommend changes in county policy.

1.2 Relationship to Other General Plan Elements

Government code section 65300 et seq. requires the county to have a general plan that consists of seven mandatory elements. In addition to the required elements, the plan may include other optional elements, such as energy, which relate to the physical development of the county. Upon adoption, an optional element becomes an integral part of the general plan. It has the same force and effect as the mandatory elements.

The general plan is required by law to be an internally consistent statement of local government policy. Each element of the general plan must be integrated and consistent with all other elements. This element is related to the Land Use, Conservation, and Recreation Elements of the county general plan. The Local Coastal Plan Policies portion of the Land Use Element also has policies relating to energy and industrial development.

1.3 Methodology

This project was completed by county planning staff, with a great deal of assistance from the Offshore Energy Task Force. County funding came from grant monies received through the state Coastal Resource and Energy Assistance Program (SB 959). Since the primary purpose of the grant program was to allow local agencies to develop planning, monitoring, or mitigation projects related to offshore oil, this plan was an ideal candidate for grant funding.

This document is intended for use by the public, oil industry, and local decision makers to better understand the issues related to offshore oil development. In the past, there has been no one document that could be relied upon for such information. Onshore siting policies, formulated in the late 1970's as part of the Local Coastal Plan, were developed when there was not as great an interest in offshore oil development adjacent to our county. Similarly, policies have been

developed which address offshore oil leasing activities in response to specific leasing proposals. These policies needed to be refined, updated where necessary, and consolidated into one document. Though the state and federal governments have primary jurisdiction offshore, the county's policies nevertheless may influence the timing and location of offshore oil and gas development, as well as related onshore activities.

It is anticipated that the element will need periodic updating as new information becomes available. This could be as a result of increased offshore activity, subsequent environmental research, or simply changes in technology which could provide new opportunities for mitigation. Since the element is being developed in advance of any offshore production off the coast of our county, it is recommended that the plan be reviewed at least every two years for significant changes which need to be addressed.

1.4 Components of the Element

Chapter II is an informational section that provides an overview of offshore oil development. It describes the many agencies which become involved and their respective role in the process. Typical activities associated with offshore development are also outlined.

Chapter III describes the historic development of existing San Luis Obispo County energy policies. Background information is provided beginning with initial studies done in the preparation of the Local Coastal Plan and through the review of related land use permit applications.

Chapter IV presents issues related to leasing offshore areas, detailing the process as well as the impacts of leasing. Also included in this chapter a summary of recent county policies.

Chapters V, VI and VII are resource chapters covering biological, fisheries, and air quality issues related to offshore development. Each chapter presents a description of the resource, and details the major issues and impacts of concern for their respective topics. The regulatory setting, including the county's role, together with the coordination required with other agencies, is described in detail. Mitigation measures which potentially reduce or eliminate impacts to the resource are described. Specific policies are made at the end of each chapter.

Chapter VIII describes onshore facility siting and the issues the county will face when evaluating such a proposal. This chapter discusses the technological characteristics of each type of facility, the environmental, system safety, and land use considerations which must be addressed in the potential siting of a facility.

Chapter IX discusses various issues related to supply and crew bases. The chapter summarizes the issues associated with these types of facilities. Chapter X deals with oil spill prevention and response. It reviews existing studies and identifies the current response structure if a spill were to occur in the waters offshore our county.

1.5 Policies

This section contains a summary of the policies found at the end of chapters IV, V, VI, VII, VIII, IX, and X. Chapters I, II, and III provide background information related to offshore energy and do not include policies. The following policies will be implemented by the county to the full extent of the law when reviewing future offshore energy related proposals.

1.5.1 Chapter IV - Leasing

1. Lease sale stipulations, if responsibly drafted, can protect the natural resources of the county and promote county interests. In the lease sale process, the county will adopt positions requesting stipulations that require the following:
 - Lease sale stipulations prohibiting lessees from using an offshore storage & transfer vessel (OS&T) for the purposes of processing and transporting OCS production, and requiring instead that all offshore oil and gas production be piped onshore for processing and movement to market.
 - Agreements requiring that before further leasing, MMS conduct a baseline biological study which focuses on this county's offshore waters, or, if leasing occurs, a stipulation requiring the study prior to initiating development of any tracts leased.
 - Lease sale stipulations requiring site-specific biological surveys intended to define the presence of and provide protection for important biological resources. The survey shall define areas of special biological significance and higher productivity, diverse and/or complex ecosystems which include high-intensity fin-fish/shell fish areas, critical habitat and rare/threatened, endangered species, unusual, rare, uncommon ecosystems, areas having an abundance or high diversity of species, and areas critical to the life cycles of species (i.e. spawning, feeding, rearing or migratory areas).
 - Protection for biological resources identified in biological surveys shall include avoidance of areas, modification of operations, and provision for a regular monitoring program during operations with authority to require reasonable corrective measures to mitigate identifiable impacts.
 - Maintain the county's Offshore Energy Task Force during lease sale review and comment periods to enhance the flow of information to the public.
2. Controlling the overall pace of offshore development can reduce the level of peak cumulative impacts and increase opportunities for orderly change in the very limited

parts of the county which may prove suitable for onshore support facilities. To accomplish these purposes, the county will adopt a position which requires:

- Leasing agencies to comprehensively study the impacts of the development of already leased tracts offshore the county (most of which lie within the buffer zone defined by the county) before additional leasing occurs.
- Leasing agencies to recognize the difficulties in accommodating onshore facilities required for development of already leased tracts and to resolve such difficulties before any additional leasing occurs.
- Require that all future pipelines and processing facilities be consolidated to the maximum extent feasible.

3. San Luis Obispo County has consistently advocated policy positions which have not been adopted in federal lease sales. To provide further protection of biological and coastal resources, and to address the general unresponsiveness of the Minerals Management Service (MMS) to these county policies, the county will adopt a position which requires:

- Permanent protection and management of the county's coastal resources using the National Marine Sanctuary and the National Estuary Programs as vehicles for protection and management.
- Future lease sales and developments be consistent with the county position that no drilling be permitted north of Morro Bay, within 20 miles of Morro Bay, or within 12 miles of the southern boundary of the California sea otter range.
- That a 15 mile buffer zone of no offshore energy activities be established around the Santa Lucia Bank to protect the rich commercial fisheries and other natural resources.
- Opposition to future lease sales until concerns including leasing in sensitive areas, the county-proposed buffer zones, understatement of impacts, overly ambitious leasing schedules, failure to consider the need to plan for onshore support facilities, and the potential roles of conservation and alternative energy resources are adequately addressed by federal agencies.
- Pursuing maximum public awareness and participation in lease sales, as well as assuming an advocacy role in affecting policy, maintaining continued clear county policy direction, and coordinating efforts with other coastal counties.
- Actively supporting legislation consistent with the county's adopted leasing policies.

- Formal opposition to exploration and development plans submitted to MMS in the event these activities are inconsistent with the county's leasing policies (i.e. where such activities are proposed in locations where the county had previously objected to leasing).
- Disapproval of proposals for onshore support facilities that are incompatible with adopted leasing policies.
- Participation to advance county policies if either the current 5-Year OCS Leasing Plan or any lease sales are challenged in court on issues directly or indirectly affecting the county.
- Review and comment on proposed lease sales and leasing-related legislation affecting other areas in instances where we share common concerns and there may be potential impacts to our county.
- Continue the practice of providing for public discussion before the Board of Supervisors in all instances where the county has the opportunity to comment on lease sales or on leasing-related issues so that interested individuals and organizations are provided maximum opportunity for input.

1.5.2 Chapter V - Biology

1. The biological resources of the county have a long term value which is only partly economic. To protect this value should offshore oil development prove to be unavoidable, the county will adopt a position which requires:
 - All future pipelines and processing facilities be consolidated to the maximum extent feasible.
 - Adequately functional, sized, coordinated and staffed facilities for cleaning and rehabilitating seabirds and marine mammals be made available on the central coast prior to further leasing or development.
 - Biological surveys are conducted by lessees as part of the process of siting individual platforms.
2. General policies which reduce potential impacts of offshore oil and gas development on biological resources will be enacted. To implement such policies, the county will adopt a position which requires:
 - The lay barge method of laying pipelines be used offshore in coastal areas which have significant habitat values, unless the bottom pull, or another better method is found to be significantly less impacting to the environment.

- The environmental review be focused to determine in other coastal areas whether the lay barge, bottom pull or other methods of laying pipelines offshore adequately minimize impacts, and require the environmentally superior method.
 - Stipulations or conditions of approval which require that helicopters used to transport crew and/or materials to offshore platforms or other offshore oil-related projects avoid flying over areas significant to wildlife and also maintain a minimum 1000 foot altitude clearance.
3. Careful timing, location, and design and configuration decisions for specific offshore oil and gas exploration and development activities can lessen impacts on biological resources. To promote such decisions, the county will adopt a position which requires:
- Biological surveys be conducted by lessees as part of the preliminary work of siting individual platforms and pipelines.
 - Exploration and construction be conducted during times of the year likely to affect biological resources least, considering frequency of storms, breeding, migration, nesting seasons, seasonal upwellings and other factors.
 - Exploration and construction near sensitive species habitat (such as least tern nesting areas) be scheduled to avoid breeding and nesting seasons. Chart seasonal migrations, breeding, and nesting cycles to identify windows of exploration and construction.
 - Terrestrial surveys, including inventorying rare plants, be conducted as part of the preliminary work for any proposed onshore support facilities. This should take into consideration the various seasons migratory or transitory species may be in an area.
 - Pipeline routes avoid steep slopes and stream crossings and other fragile habitats where possible to minimize erosion.
 - A 15 mile buffer zone of no offshore energy activities be established around the Santa Lucia Bank to protect the rich commercial fisheries and other natural resources.
 - No drilling shall be permitted north of Morro Bay, 20 miles around Morro Bay, or 12 miles around the southern range of the California sea otter, to protect onshore, nearshore and offshore biological resources.

1.5.3 Chapter VI - Fisheries

1. The county shall participate in commercial fishing issues, providing rapid assistance to fishermen and oil industry personnel in dealing with each other and with different layers of government. The county should administrate and coordinate programs and conditions and resolve issues within its permitting framework and advocate policies and positions in lease sales, decisions by other agencies, and in legislation.
2. Commercial fisheries resources off the county need to be more accurately delineated as to the economic value of different fisheries and times of year and locations where commercially harvestable species may be found. An evaluation of existing fisheries and creation of new fisheries should be considered.
3. Fisheries have a long-term economic value as a renewable resource. To protect this value, the county will adopt a position which requires:
 - Evaluation of the long-term value of fisheries as a renewable resource in assessing the needs of the fishing and oil industries, in addition to acknowledging annual catch and landing values.
 - Use of the lease sale EIS and stipulation process to articulate and advocate the full range of fisheries concerns. Any concerns which are not addressed through stipulations, should become criteria for evaluating applications which result from the lease sales.
 - The impacts of discharging toxic muds at sea be considered sufficient grounds for denial of any proposal. Wastes and cuttings shall not be disposed of in environmentally sensitive areas.
 - Disposal of muds and cuttings from any exploratory or development activities in an environmentally safe manner.
 - Protection of rich fishing areas such as the Santa Lucia Bank. These areas shall be identified and precluded from offshore energy activities.
 - Participating actively in all NPDES permit matters where authority to discharge pollutants to waters off the county is sought. Request that the least environmentally impacting options be implemented.
 - Provisions in any project approval which promote prevention, detection, containment and cleanup of spills or releases.
 - Evaluation of projects from the perspective of cumulative impacts as well as from the standpoint of (artificially) isolated project impacts.
 - Denial of any project which the county may find poses unacceptable risks to county fisheries.

- Repair and/or restoration of anchor scarring caused by offshore oil and gas activities on soft bottom substrates be repaired and/or restored.
4. Insufficient knowledge exists as to the fisheries resource off the county's coast and as to the resource's susceptibility to damage from oil and gas development. To improve this knowledge and decision making, the county will adopt a position which requires:
- Analysis of direct and indirect effects of seismic testing on fishing and on all life stages (especially eggs and larvae) of commercially and recreationally important organisms. Indirect effects shall include impacts to the food web.
 - Analysis of direct and indirect impacts of oil industry operations, including drill muds and cuttings, on the fisheries resource. Indirect effects should include effects on the food web.
5. Careful timing, location, design and configuration decisions for specific oil and gas exploration and development activities can lessen impacts on fisheries. To promote such decisions, the county will adopt a position which requires:
- Stipulations or conditions which minimize or eliminate preclusions, obstructions, toxic discharges, and debris.
 - Minimizing potential interference with fisheries operations through careful evaluation of platform, pipeline and construction spread configurations, and other testing, construction, installation and operation activities.
 - Assurance that programs are implemented and maintained to mitigate the affects on fishermen for lost time/lost catch where projects and fishing seasons overlap. Consideration of the timing of testing, exploratory drilling, construction, and other temporary activities when affected regions are most intensely fished.
 - Stipulations that seismic testing not occur except after sixty days' notice to fishermen, and that such testing not be scheduled where it would conflict with significant fisheries and seasons.
 - That any pipeline exceeding 27 inches (including coating and insulation) in total diameter, be buried to lessen the likelihood of gear snagging on the pipeline.
 - Stipulations and conditions which eliminate depositing of debris and creation of anchor scars on the sea-bottom by operators, contractors, subcontractors, or vessel operators. In addition, insist that operators build enforcement powers into construction, service and supply contracts, and then use such powers, and provisions for post-construction bottom surveys and appropriate remedial actions.

- An enforcement and compliance program related to fisheries conditions be implemented by an agency not directly involved with offshore oil and gas.
6. Policies and programs which reduce potential conflicts between commercial fishing and offshore oil and gas development, and which provide opportunities for fishermen and the oil industry to identify additional problems for consideration shall be enacted. To implement such policies, the county will adopt a position which requires:
- Rapid assistance to fishermen and oil industry personnel in dealing with each other and with different layers of government.
 - Administration and coordination of programs which provide for conflict resolution within the county's permitting framework.
 - The protection of fisheries resources using lease sale stipulations, legislation, and regulation.
 - Dissemination of information concerning oil industry exploration, development, and operation to the entire fishing community, permitting the fishing industry to be aware of and plan for oil industry activities.
 - Stipulations and/or mandated conditions which insure continuation of commercial fishing activity through prompt oil and gas industry or federal funding for gear loss, associated loss of catch, and loss of opportunity to fish in state and federal waters.
 - That stipulations and conditions require 1) recognition that preclusion of areas to fishing impairs the local economy, 2) contribution for enhancements such as ice houses, landing equipment, and development of alternate fisheries or fishery locations, and 3) identification of appropriate proposals for funding.

1.5.4 Chapter VII - Air Quality

The following policies address issues that pertain to the general subject of offshore energy development and those which are specific to the individual phases of the process as presented in this chapter.

1. The development of offshore oil and gas resources is a lengthy and complex process requiring interaction and cooperation among many different agencies. To that end, the following policies shall be adopted:
 - A comprehensive scoping process at the start of each proposed project to receive input from all affected agencies prior to any regulatory approvals to proceed.

- A statewide Technical Advisory Committee (TAC) be established to provide preliminary review of proposed modeling protocols, feasibility studies for platform electrification, and general technical oversight for the air quality review process on each project. Participating members should include the EPA, MMS, ARB, the affected APCD's, industry, and an independent air quality consultant.
2. The performance and review of air quality analyses is also a complex and controversial process. Consistency in approach, methodology and interpretation of the analysis is necessary to provide an adequate basis for decision-making. As such, the following policies shall be adopted:
- Require the performance of a thorough, cumulative assessment of potential ozone impacts for each project, using an analysis approach approved by all affected agencies.
 - Development by the TAC of formal guidelines for the performance of a platform electrification feasibility analysis. The guidelines should include identification of the information and methodology to be used as well as the evaluation criteria by which to judge feasibility.
 - Further development of the regional air quality monitoring network is needed to enhance the air quality database for impact analysis and decision-making, and to track the future impacts of offshore development.
 - Request MMS to install meteorological buoys offshore Pismo Beach and Morro Bay to provide baseline offshore meteorological data for this region.
3. Establish firm policies to protect air quality in the county from the impacts of offshore energy development. Specifically, the following policies shall be adopted:
- Oppose all future lease sales along the central coast until the actual impacts from development of existing leases are determined and mitigated to levels which will not cause violations of state or national ambient air quality standards.
 - If future lease sales do occur, request lease sale stipulations be adopted which require a platform electrification feasibility analysis to be performed and submitted with each Development and Production Plan. Platform electrification from an onshore power source should be required to the maximum extent feasible, as identified in the analysis; other mitigation alternatives could also be considered, provided they achieve an equivalent level of emission reduction.
 - Require that significant consideration be given to potential cumulative impacts when making project-specific decisions.

- Require maximum feasible mitigation of ozone precursor emissions from offshore energy development projects.
4. Request Environmental Protection Agency and California Coastal Commission to place the following conditions on offshore exploration activities:
- Scheduling of exploration activities during the period between November and June to avoid impacts during the peak ozone season, provided that it does not conflict with seasonal limits for other sensitive resources and does not require operations during unsafe weather conditions.
 - Limit the number of drill rigs which can operate concurrently within a specified region.
 - Require the use of Caterpillar D-399 diesel electric generators on the drilling rigs, if feasible, or other prime movers with equivalent emissions. If not feasible or available, vessels with controlled emissions in the lower half of the exploratory vessel fleet (i.e. - the "cleanest" vessels) should be required.
 - Require helicopter transport of personnel, except during unfavorable weather conditions, to reduce the simultaneous occurrence of crew and supply boats at the drilling unit. If crew transport by boat is unavoidable, then careful scheduling of crew and supply boats should be required to reduce simultaneous occurrence at the platform.
 - Require maximum feasible mitigation of NO_x and ROG emissions from the crew and supply boats which service the drilling unit (see support vessel recommendations below).
 - Require that crew and supply boats not be present together at the drilling unit during scheduled flaring for drill stem testing.
5. Require that the following mitigation measures be implemented for construction activities associated with offshore platform and pipeline installation:
- Require the use of Cat D-399 diesel electric generators on derrick and lay barges, if feasible, or the use of other prime movers with equivalent emissions. If direct injection diesels are used, injection timing retard of 4° and adjustments to the air-to-fuel ratio should be applied to reduce NO_x emissions.
 - Require maximum feasible mitigation of NO_x and ROG emissions from all support vessels involved in construction and installation activities, including crew and supply boats, light-duty tug boats and other applicable vessels (see support vessel recommendations below).

- Require the use of low-sulfur diesel fuels on all support and installation vessels operating within 3 miles of shore.
 - Require the development of a comprehensive activity management plan designed to reduce the simultaneous occurrence of large polluting activities where possible.
6. Require that the following emission control strategies be implemented for all offshore development and production operations:
- Platform electrification from an onshore power source, which currently represents the best available control technology (BACT), shall be implemented to the maximum extent feasible at the earliest stage of development; feasibility determinations should not include consideration of any construction of project components begun prior to completion of the regulatory review process. Other mitigation alternatives should also be considered if they can achieve equivalent emission reductions.
 - Use of natural gas for fuel and Best Available Control Technology (BACT) on all turbines permitted for use on platforms.
 - Use of ARB-certified automotive diesels on all independently-powered equipment for which electrification is demonstrated infeasible (e.g. - cement pumps, logging units, cranes, vessel generators, etc.).
 - Use of low-NOx natural gas-fired heaters for process heat needs, if applicable and feasible; applicability and feasibility should be determined during the platform electrification study.
 - Implementation of a rigorous inspection and maintenance program for detection and repair of process components and equipment which cause fugitive hydrocarbon emissions.
 - Use of state-of-the-art flare systems; restricting flaring events to documented emergencies, process upsets, well testing and scheduled maintenance.
 - Implementation of a comprehensive activity management plan to minimize the simultaneous occurrence of NOx generating activities.
 - Use of helicopters rather than crew boats for transport of personnel, except during unfavorable weather conditions.
 - Use of pipelines rather than tankers to transport produced crude to shore.

- Assure that platform design includes sufficient storage capacity to minimize the use of supply boats for added deck space.
7. Require maximum feasible mitigation of NO_x and ROG emissions from all support vessel operations associated with exploration, development and production activities. The following control strategies have been demonstrated, or have the potential, to achieve significant emission reductions:
- Use of injection timing retard of 4° combined with an enhanced intercooler on the turbocharger for all vessels under contract to a project. Limit the use of uncontrolled, spot-chartered vessels to scheduled downtime or emergencies requiring an extra vessel.
 - Reduction of vessel cruising speed to 15% below top speed.
 - Use of alternative fuels, such as propane or a dual-fuel mix, if feasible and able to comply with applicable regulatory restrictions.
 - Implementation of a comprehensive activity management plan designed to consolidate vessel use and reduce the number of trips required for each project.
8. Require the following measures to be implemented for the construction and operation of all onshore facilities associated with offshore energy development:
- Require each project to develop and implement a comprehensive Construction and Installation Emissions Mitigation Plan (CIEMP) covering all phases of onshore construction. Such a plan would specify the equipment, emission controls and activity management techniques to be employed to achieve compliance with local, state and federal ambient air quality standards.
 - Conduct onsite inspections of construction operations to assure compliance with the CIEMP.

The policies given above emphasize the need for stringent air quality protection while recognizing the unique and variable nature of the offshore development process. Adoption of these recommendations will provide guidance to future project applicants and regulatory direction for future development offshore San Luis Obispo County.

1.5.5 Chapter VIII - Onshore Facilities

Specific policies stated below are policy guidelines and are not intended as a comprehensive statement of conditions to be imposed on individual projects. The policies include:

1. Buffer zones shall be based on analysis recognizing maximum hazard footprints with a margin for safety, air pollutant and odor emissions, prevailing winds, noise, and viewsheds, incompatible uses, and long-term regional trends.
2. Facilities should be sited in swales or other natural depressions and should not be profiled against horizons.
3. Facilities shall be sited within five minutes response time of an adequately staffed and equipped fire/emergency response station.
4. Industry shall maximize employment opportunities for local residents to reduce impacts from the influx of out-of-area temporary employees.
5. Natural gas pipelines shall be sited away from population concentrations where possible.
6. Non-pipeline construction and development near residential areas shall be prohibited.
7. Facilities shall have state-of-the-art pressure relief, monitoring, and fire prevention, detection, and suppression devices.
8. Facilities shall be consolidated where possible unless cumulative impacts from consolidation produce an unacceptable "hot spot".
9. That conditions for specific onshore facilities be developed on a case by case basis, taking into consideration the type of facility proposed, proximity to population, environmental constraints of the site, the potential for upset, the facilities hazard footprint, and the cumulative impacts over the life of the facility.

1.5.6 Chapter IX - Supply and Crew Bases

Supply Base

1. A supply base proposal would require an amendment to and subsequent consistency with the county's existing Local Coastal Program and the Port San Luis Harbor Master Plan where applicable. A supply base is not consistent with the LCP as certified by the California Coastal Commission nor with the Port San Luis Master Plan and is not currently considered an allowable use. Projects shall be sited in such a manner that segregates the associated activities from other harbor users, thus reducing the potential for conflicts and accidents.
2. A proposal for an amendment to the LCP for a supply base shall clearly define the scope of the operation during the life of the project. The amount and type of supplies transported to and from should be identified, the number of personnel to be transported, the type and size of boats to be used, the number of daily trips, and other equipment that

would be operated. Also identified should be the types of drilling operations that will be supported and the time frame.

3. Air quality issues related to the operation of supply base will be evaluated and regulated by the county's Air Pollution Control District and shall utilize the best available control technology (BACT) to the maximum extent feasible.
4. A comprehensive analysis of the needs related to mooring, land, pier, water, roads and access, parking, and other harbor facilities required by a proposed supply base shall be completed. Current users, such as commercial fishermen and recreational boaters, shall be included in the analysis.
5. Designated vessel traffic lanes should be mutually agreed upon by all users and jurisdictions of a harbor where a supply base would be sited. The Fishermen/Oil Liaison office in Santa Barbara County should be used for coordinating these concerns.

Crew Base

6. A crew base proposed in San Luis Obispo County shall comply with the Local Coastal Program, Land Use Element policies and regulations and the Port San Luis Harbor Master Plan where applicable. It shall also be sited in such a manner that segregates the associated activities from other harbor users, thus reducing the potential for conflicts and accidents.
7. A proposal for a crew base shall clearly define the scope of the operation. The amount and type of supplies transported shall be identified, the number of personnel to be transported, the type and size of boats to be used, the number of daily trips and other equipment that would be operated. Also identified shall be the types of drilling operations that will be supported and the time frame.
8. Air quality issues related to the operations of crew base will be evaluated and regulated by the county's Air Pollution Control District when and if a proposal is submitted and shall utilize the best available control technology (BACT).
9. A comprehensive analysis of needs related to mooring, land, pier, water, roads and access, parking and other harbor facilities or resources required by a proposed crew base shall be completed. Current users such as commercial fishermen and recreational boaters shall be included in the analysis.
10. Designated vessel traffic lanes should be mutually agreed upon by all users and jurisdictions of a harbor where a crew base would be sited.

Specific Policies

1. That the county's Local Coastal Program, the industrial and energy policies in the Framework for Planning and the San Luis Bay planning area standards, shall be periodically reviewed for consistency and modified if appropriate. Specific consideration should be given to:
 - clarifying definitions of a crew, service and supply base;
 - updating the list of potential crew or supply sites based on new information;
 - clarifying the LCP to state that supply/service and crew base's are clearly different facilities;
 - updating the LCP to clearly indicate that a change in operational use by a base, such as from temporary to permanent status, will require a separate review and analysis; and
 - coordination with Port San Luis Harbor District for consistency with the Harbor Master Plan.
2. That any proposed crew base or proposed LCP amendment for a supply base provide a list of the types and quantities of supplies, materials and equipment to be transferred to and from the base.
3. Require crew boats to meet specific operational standards and have certain characteristics depending on the safety and environmental factors of the area they are proposed to operate in.
4. Require that all crew boats be manned or monitored 24 hours a day during storm season (October 15 through April 15) to assure they do not break off their moorage and damage other boats.
5. That the maximum number of crew boats docking per day per operator be limited depending on the carrying capacities of the area proposed for a site.
6. That a vehicle trip reduction program will be required to and from the a transfer site.
7. Local hiring of personnel shall be encouraged by companies participation in a local hire program.

1.5.7 Chapter X - Oil Spill Response

1. That San Luis Obispo County representatives participate in oil spill drills and activities implemented by the California Office of Oil Spill Prevention and Response.

2. That a county task force of local agencies and industry that may be involved in an oil spill response effort be formed to build an efficient and coordinated response organization that can support the state and the federal response structure. The task force shall consult with native american representatives regarding potential impacts to cultural resources during the formation and through implementation of the oil spill response effort.
3. That the county Office of Emergency Services work with the state Office of Oil Spill Prevention and Response to develop an oil spill contingency plan for the marine and coastal environments of the county.
4. That the county identify and obtain funding sources for contingency planning and related activities.
5. That training programs for county agencies related to oil spill prevention and response be developed.
6. That the county compile all industry contingency plans in a central and accessible location.
7. That the resources, equipment, and personnel who will respond to an oil spill are clearly known to all entities involved in an oil spill response. That identification badges be provided to those individuals who will be involved in spill response.
8. As part of land use permit applications related to new oil and gas facilities, the county should consider whether contingency funds are available that would be used to purchase response equipment, set up training programs, and provide funds for immediate response by pre-designated entities.
9. That the county coordinate with the state Office of Oil Spill Prevention and Response to insure that all facilities have adequate financial resources for reimbursing the county for any damages or costs incurred as a result of an oil spill.
10. That the county develop a program that provides citizens with the appropriate training and certification to be qualified volunteers in a clean up effort.
11. That industry oil spill contingency plans include immediate access to stockpiled equipment and materials which are appropriate for responding to spills in the nearshore, rocky intertidal areas of the county. A partial list of such equipment includes kelp cutters, small boats, sorbent materials, cranes and steam cleaners.

CHAPTER II: OFFSHORE OIL DEVELOPMENT

2.1 Development and Production of Offshore Oil and Gas

This chapter presents an overview of: 1) the ways in which offshore petroleum and gas reserves are found and developed, 2) facilities and equipment employed in locating, and producing petroleum resources, 3) a summary of expected impacts, and 4) a profile of the regulatory process.

Substantial petroleum and natural gas resources, recoverable in commercial quantities, are known to exist in the outer continental shelf off southern San Luis Obispo County. The exact potential for petroleum and natural gas reserves offshore the county's coastline is unknown, but future geophysical and exploration activities could reveal additional quantities of recoverable reserves. Figure II-1 on the following page shows the recognized discoveries and the estimated location of the reservoirs.

To date, regulatory agencies have received applications to produce, process and ship petroleum from one offshore lease. Over the next ten to twenty years, the county anticipates the possibility of development and production proposals for several additional leases and the attendant onshore processing, refining, storage and pipeline facilities. The county could also receive proposals for supply, crew or helicopter bases to transport workers and materials between shore and platforms. Further, the county may receive proposals for additional marine terminals to ship resources produced offshore or to expand existing terminals.

Petroleum development has the potential to adversely affect air, water, biological, cultural, and scenic resources of the county. Development may also add jobs and revenues to the local economy.

2.2 Offshore Facilities

Offshore facilities may either be mobile, including drilling vessels and drill rigs, or fixed, including production platforms. Production platforms are the focal point of offshore development because they accomplish the primary goal of production and because of the support platforms require. Platforms require immense quantities of energy, supplies and crew must be brought from shore, and petroleum and natural gas must be produced, treated, and shipped. A variety of offshore facilities are described in the next section.

Geophysical Survey Vessels: Geophysical survey vessels operated by petroleum companies or independent contractors perform offshore seismic and geological surveys to assess the potential for recoverable hydrocarbon resources. These vessels release large amounts of

sound energy into the water. The energy radiates through the water column and the sea floor.

Figure II-1
Estimated Reserves Santa Maria Basin and Santa Barbara Channel

Reflected energy received by the vessels helps to profile bottom and subbottom conditions, locate geologic anomalies, and highlight potential resource deposits. Survey vessels may tow cables up to two and half miles in length. Cable ends may be marked by buoys. Figure II-2 diagrams a geophysical vessel.

Exploration Rigs: A petroleum company which successfully leases (the lease sale process is discussed in chapter IV) an offshore tract from the state or federal government may choose to conduct exploratory drilling on the tract. The first exploratory step is using geophysical survey data to select likely drilling sites. Then the leaseholder brings in a drill ship or other mobile rig to drill test holes at the sites selected. After drilling, personnel analyze core samples and other data to locate and define hydrocarbon reserves. Finally, the leaseholder, taking economic and regulatory considerations into account, makes a decision on attempting to develop and produce petroleum resources from the lease.

Production Platforms: When a company decides to develop a lease, it uses data from geophysical surveys and exploratory drilling to choose optimal locations for permanent production platforms. Platforms are commonly built in separate components and assembled on the lease site.

The first and largest component is the *jacket*, a girdered structure set into the sea bottom and rising 100 feet or more above the sea surface. Modules containing drilling and production equipment, pumps, crew quarters, and any required processing equipment are set atop the jacket. A large number of transport, crane, and support vessels deliver and assemble the components.

Drill rigs operating through slots in the platform decks drill wells into the reservoir. Petroleum either rises to the platform as a result of reservoir pressure, or it is lifted by pumps. Natural gas normally rises by reservoir pressure. Natural reservoir pressures can be maintained or enhanced by injection of fluids.

Petroleum and natural gas may be partially or completely processed at a platform before shipment. Some leases may be developed by constructing and operating a multiple platform complex, with some platforms being devoted to drilling and production, while others serve as processing or storage points. Stationary vessels such as the offshore storage and treatment vessel, ("O.S.&T.") long associated with Exxon's Platform Hondo in the Santa Barbara Channel, may serve as offshore processing and storage facilities. Petroleum and natural gas can be shipped from the platform by pipeline or tanker.

Most of a platform's energy needs are for electricity. Electricity may be supplied by cable from shore or produced by burning fossil fuels in generators at the platform. The development and production plan may also include a provision for heat to process hydrocarbons, or, as in the case of the proposed San Miguel Project, to reduce the viscosity of the crude. Figure II-3 shows some of the different types of drilling rigs.

Figure II-2
Geophysical Operations

Figure II-3
Offshore Drilling Rigs

Subsea Completions: Subsea completions are wells, pumps and pipelines located entirely below the water's surface. Completions may be economical for small fields near shorelines or platforms. They do not cause a visual impact as platforms do, but are harder to manage and potentially more likely to produce spills or to snag fishing gear.

2.3 Offshore/Onshore Facilities

Pipelines transmitting fluids and cables transmitting electricity both support offshore development. Pipelines and cables run between onshore and offshore portions of projects, but may also be found entirely onshore or offshore.

Pipelines: Pipelines, metal or concrete tubes, transport fluids between production points and processing and refining facilities, and from the latter to market points. Pipeline diameters and wall thicknesses depend on expected shipment volumes and pressures, on external conditions in the pipeline corridor, and on economics. A pipeline may be double-walled to provide insulation or added insurance against rupture, may be wrapped in protective or insulating coatings, may be buried or laid on a surface, and may be designed to transport more than one fluid. Figure II-4 depicts onshore and offshore pipeline laying methods.

Pipelines serve offshore development by transporting a wide variety of fluids, including crude or processed petroleum, refined petroleum products for sale, processed or unprocessed natural gas, water, steam, brine, and process fluids such as diesel. Pipelines may move fluids between platforms, between platforms and onshore facilities, to or from a tanker, or between onshore points. The All-American Pipeline transports crude oil through San Luis Obispo County to major refineries on the Gulf Coast and then into the most extensive product distribution system in the United States. Unocal, Chevron, and the Gas Company also operate extensive pipeline systems in the county.

If properly sited, built and operated, pipelines are often the safest and cheapest means of moving fluids between points; they have few moving parts, low operating costs, and a low incidence of spills per volume of fluid transported. Major disadvantages include pipelines' high initial capital cost and their lack of flexibility in product destinations.

Pipeline routes are often conceived as straight lines between origin and destination points. Route adjustments are commonly made for engineering, environmental or political considerations. An offshore pipeline is built by designating a route, assembling pipe onshore or aboard a vessel, slowly pulling the pipe from shore or lowering it from the vessel, and, if needed, trenching on the bottom before or after the pipe is laid. An onshore pipeline is built by staking a route, clearing and grading a corridor, digging a trench, assembling pipe in the corridor, lowering pipe into the trench, filling the trench, and regrading and restoring the corridor. A pipeline uses pumps or gravity to move fluids.

Figure II-4
Offshore and Onshore Pipeline Laying Methods

Electric Cable: A platform may get some or all of its electric power from shore by way of a cable laid on the sea bottom or buried in a conduit. Onshore, electricity may be transmitted through buried cable or overhead lines. Route considerations are similar to those for pipelines.

2.4 Onshore Support Facilities

Offshore development and production facilities require onshore support. While most processing prior to refining could be performed offshore, processing is generally more economical and environmentally sound if conducted onshore. Similarly, pipeline shipment is generally preferable to transport by ocean vessels or by rail. Materials, supplies, and personnel must move to and from the platform; refining and marketing are typically onshore activities. Certain support facilities which may be proposed for construction in San Luis Obispo County are discussed below.

Oil Processing Facilities: Oil processing facilities remove water and impurities to prepare petroleum for shipping. Oil so processed is referred to as "pipeline quality" and is characterized by having less than one percent residual water content. Impurities may be disposed of by being hauled offsite to appropriate disposal sites or by being piped back to the platform for discharge into the ocean or reinjection. No facilities in the county currently process offshore oil. Figure II-5 shows oil and gas processing facilities.

A processing facility commonly includes heating units, pumps, flares and storage tanks. Its capacity to produce emissions and odors, as well as the possibility of fire and explosions, require that any such facility be sited an appropriate distance from residential areas. (Chapter VIII discusses buffer areas for these facilities.)

Grading for and construction of a processing facility should normally take less than one year. During operations, processing facilities normally require only a small number of workers.

Refineries: Refineries employ complex heating, cracking, (the break down of crude into different components) and compounding processes to turn crude oil into marketable petroleum products. Refineries normally require large quantities of power and water. Because of the special danger from fires, explosions, and air pollution and the presence of odors, refineries require large, isolated, industrial lands for siting. Upstream (near the point of production) partial refining of heavy crudes such as those found in the offshore Santa Maria Basin has been discussed as a means of upgrading the crudes before shipment to distant destinations such as Texas.

Grading for and construction of a refinery can be expected to take longer than similar activities for an oil processing facility, and refineries require more operation workers than do oil processing facilities. The Unocal Santa Maria refinery, located on the Nipomo Mesa in southern San Luis Obispo County, refines crude from various sources including Unocal's offshore Platform Irene, which is located offshore of Point Pedernales in Santa Barbara County. Unocal

Figure II-5
Oil and Gas Processing Plant

moves partially refined product by pipeline to its marine terminal at Port San Luis for tanker shipment to refineries in Los Angeles or San Francisco. This product could also be moved via pipeline to the San Joaquin Valley.

Oil Storage Tanks: Storage tanks are necessary for temporary storage of crude, processed, or refined oil prior to shipment. Numerous types of tanks with varying capacities may be built. Storage for several days of peak production may be required in a consolidated facility which serves several production sites. A typical storage tank is equipped with mixers, volume and temperature indicators, alarms, vapor recovery units, fire suppression equipment, and pressure protection devices. A storage tank is normally required to have berm around it which can contain its entire contents in the event of a spill. Figure II-6 shows a diagram of a tank farm.

Pump Stations: A pump station consists of machinery to push or pull fluids along a pipeline route. Gas transmission lines require periodic pump stations; liquid transmission lines also require periodic stations, but may get assistance from gravity on some parts of their routes. Pump stations do not require large amounts of land for siting, but do require road access for servicing and the availability of utility service for power. Most pump stations are electrically powered and unmanned.

A variation on the pump station which may become significant in this county is the "heater-treater" station, which combines pumping capability with equipment for reheating crude oil to reduce viscosity, thereby easing shipment. Onshore processing or refining facilities for heavy crude oil may require such facilities as may a pipeline transporting heavy crude. Impacts from any such facilities will depend on their size and location, and on specific heating and pumping requirements.

Gas Processing Facility: Gas processing plants are designed to remove impurities and recover liquid hydrocarbons such as methane, butane, and propane from produced gas. The plants vary in size depending upon the volume of incoming gas and processing required. The plants are especially susceptible to damaging fires and explosions and to emissions of air pollutants and odors. For siting, they require large isolated areas of land. Gas processing plants require immense quantities of water and produce significant quantities of hazardous and toxic materials.

As a result of projected gas production from the Northern and Central (predominantly Northern) Santa Maria Basin, Santa Barbara County has prepared a study to give direction for locating expected gas processing facilities. The study assumes a need for two 80 MMCFD (80 million cubic feet per day) gas processing plants. It was reviewed by a task force which included San Luis Obispo County staff, major oil companies, citizens' groups, and others.

A study prepared for the San Miguel Project EIS/R estimated a 125 MMCFD peak for Northern Santa Maria Basin gas production. In 1988, Minerals Management Service estimates anticipated a lower peak.

Figure II-6
Marine Terminal and Tank Farm

Marine Terminals: The purpose of a marine terminal is to load or offload tankers. The material shipped or received may be crude petroleum, petroleum products, or natural gas. A marine terminal is composed of a mooring system for the tanker, a hose or pipeline to transport the product, and storage facilities. Terminals may also contain ballast discharge systems and vapor balance and control systems. Ancillary equipment may include fixed or vessel-mounted fire-suppression equipment. Currently, terminals at Port San Luis and Estero Bay ship crude or partly refined petroleum and receive petroleum products. Figure II-6 shows a diagram of a marine terminal.

Siting a marine terminal is a sensitive issue because of the considerable potential for fire and explosions, air quality impacts, and oil spills. It is generally recognized that terminals engaged in shipment of liquid or pressurized natural gas must be located miles away from inhabited areas; in recent years, the same principal has been applied to the siting of crude petroleum and petroleum product terminals. More risk attaches to offloading than to loading petroleum products, but the risk is there for both. The loading port of Valdez, Alaska, for example, is located across several miles of water from the main community.

The size of a terminal will vary with the quantity and nature of materials shipped and received, and with the decision to provide a fixed-berth, multipoint or monobuoy loading or offloading facility. The total area required for a terminal, including storage facilities, is likely to be considerable.

Supply Bases: A supply base located in San Luis Obispo County would berth vessels for transporting crews and shipping materials such as drilling pipe, muds, cements, water, fuel, food and other supplies to platforms. It would require pier, roadway, parking and warehouse construction, construction of breakwaters, and possible recurrent dredging. A supply base brings frequent vessel movements, a great quantity of truck and/or rail traffic, industrialization, and attendant induced growth. Supply base construction in a beach area may cause beach erosion and harbor entrance clogging by disrupting littoral drift.

Currently, Port Hueneme in Ventura County is the only supply base serving the Santa Barbara Channel and areas to the north, including leases off San Luis Obispo County. Increasing oil development has caused some discussion of a possible need for an additional supply base nearer the Santa Maria Basin.

Crew Base: A crew base serves as a terminus for small vessels serving platform crew and minor supply needs. Crew base operations bring increased vessel and land traffic and an increase in storage facility needs, but on a smaller scale than supply bases. Currently, facilities physically adequate to serve as a crew base exist on the Unocal Oil Pier at Port San Luis. This use has been discussed in the county's local coastal program. No specific proposal for using the facilities has ever been submitted or approved.

Currently, the only large scale crew base is located at Port Hueneme. The Carpinteria and Ellwood piers in Santa Barbara County are currently operational but are used less frequently

than Port Hueneme. For reasons similar to those stated in the supply base discussion, there is some discussion of a need for a crew base nearer the Santa Maria Basin.

According to a 1984 siting study performed by Westec for San Luis Obispo County, a crew base facility for this area would need to accommodate 35% of the total trips generated in the Santa Barbara Channel and Santa Maria Basin, or 25 trips per day, based upon the projected activity north of Point Arguello. This is equivalent to 400 people per day, or 32 each trip. The study further noted that between 400-800 feet of pier berthing space would be required. Other requirements cited in the study include 200 parking spaces, shuttle bus parking, a warehouse (30' x 30' x 12' high), an office, and a helipad. The area between Point Arguello and Point Estero was evaluated in the study. Much more detailed and current information exists that could modify the needs evaluation used in preparing this study.

The study concluded that the Union Oil pier at Port San Luis was the most suitable site of those studied for such a facility. Nevertheless, no such facility has been proposed to date, and crew transport to platforms north of Point Conception is done largely by helicopter.

Helicopter Base: A helicopter base could be located at an airport, at a supply or crew base, or in an isolated area. Helicopters move crews and light supplies to and from platforms. A helicopter base requires landing pads, fuel facilities, parking and storage, and office space. Expected impacts would include noise, air pollutants, and vehicle traffic.

2.5 Impacts

While many impacts of offshore development may be partly mitigated on a project by project basis, the most important question for county residents may be the cumulative effect over time of many projects, instead of the incremental impacts of individual projects. Overall, the impacts of greatest concern are air pollutant emissions, spills, leaks, and chronic discharges, and the potential for fires and explosions.

Construction and operation of onshore facilities may also impact biological communities and adjacent land uses and may induce erosion, degrade water quality, increase noise, slow traffic, alter landforms and runoff patterns, increase sedimentation, and diminish cultural, recreational and aesthetic resources. Steadily increasing impacts on commercial fisheries and socioeconomic impacts from population increases and demands for services can be expected.

If development occurs, the energy industry's need for infrastructure would likely induce other growth. A trend toward petroleum-based land use in our county might also develop because of the need to consolidate facilities.

Chapters V, VI, and VII will discuss impacts anticipated on biology, commercial fishing, and air resources. Chapter VIII presents siting criteria and impacts for onshore facilities.

2.6 Regulatory Framework

Offshore oil activities in waters beyond 3 miles from shore are under the primary jurisdiction of the federal government.

Within the three mile limit the state government has primary jurisdiction. The State Lands Commission has jurisdiction between the mean high tide line and the three mile limit, while the California Coastal Commission exercises authority within the state's coastal zone.

Onshore support facilities are permitted by local government. County police powers extend at least to the three mile limit and CEQA duties obligate the county to consider the entirety of a project in making permit decisions. This section summarizes the regulatory framework and process governing OCS leasing and development in federal and state waters, as well as the associated onshore related facilities.

In 1977, Congress adopted a National Energy Policy Plan (NEPP). The plan, together with the Outer Continental Shelf Lands Act (OCSLA), gives the Secretary of Interior clear direction and broad authority to expedite leasing and development of the nation's offshore oil and gas resources. The plan and the act are intended to assure national security, maintain a favorable "balance of payments" through decreasing demand for imported oil, meet the country's energy needs as soon as possible, and balance implementation of the foregoing goals with protection of the environment. Summaries of the NEPP and OCSLA are provided below. Legislation and agencies which affect OCS development are summarized in Table II-1.

National Energy Policy Plan (NEPP): Objectives of the plan include reducing reliance on foreign oil, reducing exposure to supply interruptions, decreasing imports, and developing renewable and inexhaustible energy sources for sustained economic growth. The Department of Energy is required to update the plan every two years.

Outer Continental Shelf Lands Act (OCSLA): The Outer Continental Shelf Lands Act declares federal jurisdiction over submerged lands between three miles and two hundred miles offshore. It directs the Secretary of Interior to hold lease sales, and sets forth objectives including expedited expanding and developing resources, assuring national security, reducing dependence on foreign energy, maintaining a favorable balance of payments in world trade. The Act requires that energy needs be met as soon as possible, that fair market value be ensured, and that free enterprise be maintained, but that these needs be balanced against protection of the environment. The Act also mandates that technological improvements to reduce environmental impacts be encouraged. The OCSLA specifies a detailed review process for each 5-year leasing schedule. It provides for comment on lease sales by the public and by affected states, federal agencies, the President, and Congress.

**Table II-1
MAJOR AGENCIES, LAWS AND PERMITS INVOLVING
OFFSHORE OIL AND GAS DEVELOPMENT**

FEDERAL AGENCIES	LAW	REGULATORY AUTHORITY
Minerals Management Service (MMS)	Outer Continental Shelf Lands Act	Permit to Drill
National Oceanic and Atmospheric Administration (NOAA)	Coastal Zone Management Act (CZMA)	Consistency Certification
Environmental Protection Agency (EPA)	Clean Water Act	National Pollution Discharge Elimination System (NPDES)
Army Corps of Engineers (COE)	River and Harbor of 1899	404 Permit, Section 10 Permit
U.S. Fish and Wildlife Service, National Marine Fisheries Service	Endangered Species Act	Section 7 Consultation
All agencies must comply with NEPA	National Environmental Policy Act (NEPA)	Environmental Impact Statement

CALIFORNIA AGENCIES	LAW	REGULATORY AUTHORITY
State Lands Commission	Submerged Lands Act; CPRC, Div 6, Sec 6001; & OSPRA	Right-of Way/State Waters Lease Management of State Lands Inspection of Marine Terminals
Regional Water Quality Control Board	Porter-Cologene Act Water Code	National Pollution Discharge Elimination System (NPDES)
Department of Fish and Game	California Fish and Game Code	Stream Alteration Permit/Oil Spill Emergency Response
Department of Transportation (CALTRANS)	Streets and Highway Code	Encroachment Permit
Coastal Commission	California Coastal Act	Coastal Development Permit
Air Resources Board	Air Pollution Control Laws	

LOCAL AGENCIES	LAW	REGULATORY AUTHORITY
County/City Government (Planning Departments)	General Plans, Local Coastal Plans, Zoning Ordinances	Land Use Permit/Coastal Development Permit, Conditional Use Permit. Building Permits
Measure A	Local Coastal Plan	Voter Approval of Onshore Facilities
Air Pollution Control District (APCD)	Clean Air Plan	Authority to Construct, Permit to Operate

2.7 Regulatory Phases of OCS Development

Lease Sales: To fulfill the mandates of NEPP and OCSLA, the Department of the Interior's Minerals Management Service (MMS) conducts lease sales for designated tracts in OCS waters. Lease sales convey the right to develop and produce hydrocarbon resources from specific geographic areas of the OCS. Chapter IV provides a detailed description of the federal lease sale process.

Exploration Plan (POE): Oil companies may conduct exploratory drilling on tracts which they secure through the lease sale process. A leaseholder must submit a plan of exploration along with an oil spill contingency plan and an environmental report to the MMS prior to commencing drilling. The environmental report should describe project effects on the environment. It is not an Environmental Impact Statement (EIS). An EIS would address a wider range of topics and would be subject to a more extensive public review process. Plans of exploration are subject to the Coastal Commissions consistency review process.

Development and Production Plan (DPP): A leaseholder must submit a Development and Production Plan (DPP) to MMS before constructing a platform on a lease. The DPP must include a description of the drilling platform, pipelines, and other facilities to be used, wells, geologic data, applicable safety standards, and a time schedule. MMS may specify additional requirements to reflect local conditions. Like the POE, the DPP is accompanied by an oil spill contingency plan and an environmental report. The environmental report describes the extent and timing of proposed offshore and related onshore operations, requirements for land, labor, material, and energy, proposed means of oil transportation (pipeline and tanker), waste disposal, cultural concerns, oceanographic, meteorological, and geological conditions, and the significance of potential impacts.

Once it deems an application complete, MMS has 120 days to approve or disapprove the DPP, or, if approval might significantly affect the quality of the environment, to determine that an Environmental Impact Statement should be prepared. DPPs are also subject to Coastal Commission consistency review. In recent years in Central California, some impact statements have been jointly prepared with affected state and local agencies to satisfy federal (NEPA) and state (CEQA) environmental requirements. Preparation of joint statements has been managed by joint review panels composed of representatives of local, state, and federal agencies with jurisdiction over the project.

2.8 State Waters

The State Lands Commission (SLC) has jurisdiction over leasing and development such as geophysical testing and exploratory drilling within three miles of shore. This includes pipelines and other facilities placed within three miles of shore to service facilities located in federal waters. The SLC first studies an area, then holds a lease sale. A leaseholder seeking development must obtain development plan approval from the SLC, coastal approval from the Coastal Commission, and an NPDES (National Pollution Discharge Elimination System) permit from the Regional Water Quality Control Board (RWQCB). The county and the Department of Fish and Game also have regulatory authority.

There has been no leasing in state waters offshore San Luis Obispo County. The state legislature has exempted these waters from drilling by designating them a sanctuary. Sanctuary status could be eliminated either by a legislative act or by findings by the State Lands Commission that petroleum resources underlie

the sanctuary and that the resources are in danger of being drained by production occurring on nearby lands.

2.9 Onshore Facilities

Onshore facilities supporting offshore development must receive local government approval, including approval by the voters in accordance with measure A. Measure A, adopted by county voters in November 1986, provides an added requirement that any permit issued for onshore facilities related to offshore development must be approved by a majority of voters.

A development plan application containing detailed project information must be submitted for most major projects. For projects in the coastal zone, the development plan application is also the coastal development permit application.

After accepting the application, the county determines whether an environmental impact report should be prepared. The application is reviewed by the Planning Commission and afterward by the Board of Supervisors for consistency with county plans and ordinances and with provisions of the California Environmental Quality Act.

For most new petroleum facilities, the county also requires that a specific plan be prepared by the applicant and approved by the county Board of Supervisors before a development plan application is filed. The specific plan process is used to evaluate a project in a more comprehensive manner. This process allows the county to better assess the offsite and long-term impacts of a particular project. A specific plan will enable the county to more accurately evaluate the compatibility of large industrial projects with the characteristics of the region and will provide for long term assurances for both the county and industry.

Applicants or other affected parties may appeal local development permit decisions on to the Coastal Commission. After the administrative review of local decisions is exhausted, court review may be sought.

CHAPTER III: POLICY BASE

3.1 Introduction

The county has adopted policies which address energy facilities in the coastal zone. These are primarily contained in the county's Local Coastal Plan (LCP). In addition, the county has adopted positions on offshore leasing and development activities. These positions have taken the form of recommendations to appropriate state and federal agencies. Together, these coastal policies and recommendations comprise the county's existing policy base with regard to offshore oil and gas development. The Offshore Energy Element is a policy document that addresses many issues associated with offshore oil and gas development. The element outlines these policies and positions and suggests how they may be revised or expanded through this plan.

3.2 Evolution of County Policies

The majority of county policies related to offshore energy and related onshore activities are contained in the Local Coastal Plan (LCP). The LCP was certified in 1988 by the California Coastal Commission. Some of the energy policies it contains were first developed in the late 1970's. This was before there was significant public interest in development of oil and gas resources offshore our county. Consequently, the policies are limited in scope and do not necessarily reflect knowledge gained from subsequent oil development activities.

In addition to LCP policies, the county has formally adopted positions at public meetings on federal offshore oil and gas leasing proposals. These positions have been transmitted as recommendations to the California Coastal Commission for their consideration in making consistency findings, to the Governor for consideration when developing the state's comments, or directly to the Minerals Management Service.

The County has developed a series of statements passed by resolutions of the Board of Supervisors on the Five-Year Programs and individual lease sales including, #53, 73, and 95. In 1990, the county presented written and oral testimony to the Presidents Outer Continental Shelf Task Force at a hearing in Santa Barbara.

The development of the Offshore Energy Element provides an opportunity to study and consider amendments of related policies contained in the LCP in the future. The policies and recommendations found at the conclusion of later chapters may in some instances be appropriate for inclusion into the LCP. This can be done through an implementation program.

In addition, the information, policies and recommendations approved by the Board of Supervisors, are reflected in comments to state, federal, and other local agencies involved in review of offshore energy projects and programs proposed in the state and federal waters.

Specific leasing actions the county has commented on include: the Federal 5-year OCS Leasing Schedules, Lease Sale 53, Lease Sale 73, and the Lease Sale 95 Call for Information. In 1991, the county responded to the 1992-97 five year leasing program proposed by the Minerals Management Service. It is the position of the county that the MMS require the following:

1. The proposed leasing within the Santa Maria Basin does not meet the "critical balance" criteria (the environmental and economic costs and benefits of development) as set forth in Outer Continental Shelf Lands Act (OCSLA), and shall not be offered separately from the balance of the west coast. This is consistent with H.R. 2295 currently being considered by the United States Congress.
2. All blocks (3 x 3 mile lease tracts) north of Morro Bay, 20 miles around Morro Bay, and 12 miles around the southern range of the California sea otter (the Santa Maria River) shall be deleted from consideration due to environmental sensitivity. Leasing of these areas shall not occur until the proposed program considers the type of alternatives, similar to those being considered elsewhere in the country.
3. Further pre-leasing and development activities shall be stopped until MMS complies with all the recommendations of the National Academy of Sciences and a detailed program schedule has been established outlining the timing of studies completion.
4. The Santa Maria Basin shall be precluded from leasing consideration based on the inadequate onshore infrastructure to support oil and gas development and being inconsistent with the President's OCS Task Force recommendation to target areas "in close proximity to existing onshore infrastructure."
5. The Santa Maria Basin shall be precluded from consideration of leasing until NOAA's Marine Sanctuary Site Evaluation List process is revised and H.R. 3099 has been given adequate consideration by the United States Congress.
6. Offshore oil and gas lease sales shall not occur until the federal government adopts and implements a national energy policy. The program should incorporate a "least-cost" national energy policy which places the highest priority on federal actions that reduce demand for oil and gas consumption through efficiency and conservation, and which removes subsidies for non-renewable resource depletion and creates incentives for renewable energy sources.
7. MMS shall defer the 87 blocks proposed in the southern California planning area due to the substantially underestimated and deficient impact analysis of marine productivity and environmental sensitivity.

8. New pre-leasing activities shall not be considered until the cumulative impacts from previously leased and undeveloped blocks in the Santa Maria Basin have been defined and more thoroughly analyzed and a mitigation program developed. Appropriate stipulations should be incorporated directly into all existing leased blocks, all lease sales, and subsequent post-lease plans and permits to insure that the cumulative impacts from OCS activity, and onshore processing, refining, and transport operations are fully mitigated.
9. The Southern California Planning area is too diverse and shall be further divided into a Santa Barbara Channel and Santa Maria Basin planning areas subject to their own environmental impact statements for the proposed program Draft Environmental Impact Statement (DEIS).
10. The program for the Pacific Region shall not go forward because the environmental costs are clearly in excess of the assumed benefits as presented in the Proposed Program.

In 1988, the county conditionally approved a development plan for the Shell San Miguel Project. The county's approval encompassed the onshore portion (processing facility and associated pipelines) whereas, the offshore platform and pipelines were approved by the federal Department of Interior, Minerals Management Service. The offshore platform (Julius) would have been the first platform off the county's coastline and the northern-most platform offshore California. The onshore processing facility and pipelines were designed to accommodate production from as many as six additional platforms. The county's action approving these onshore support facilities is therefore significant and further contributes to the county's policy base.

Very few policies were available in the LCP to guide the county's review of the Shell application. Thus, the county's decision to approve the project, as well as the conditions imposed, were a result of analysis performed by county staff in consultation with other agencies during review of the application. The county's action on the Shell permit has been taken into consideration in developing policies as part of this plan.

3.3 Summary of Relationship to the Local Coastal Plan

The San Luis Obispo County LCP was prepared in the period from 1978 to 1980. The LCP contains policies related to energy and industrial development in the coastal zone. Its policies reflect mandates of the California Coastal Act (Coastal Act).

While emphasizing protection, enhancement, and restoration of coastal resources, the coastal act plan recognizes that energy-related development on or adjacent to the ocean is necessary for the social and economic well-being of the state and the nation and to insure preservation of inland and coastal resources. The Coastal Act specifically provides that coastal-dependent industrial activity be encouraged to locate or expand within existing sites. The policy document

of the Local Coastal Plan reflects this direction. The policy document also provides direction related to:

- *Petroleum Extraction Operations and Processing Facilities*
- *Marine Terminals*
- *Pipelines*
- *Power Plants and Electrical Transmission Lines*
- *Liquefied Natural Gas (LNG)*
- *Aquaculture*
- *Offshore Oil and Gas Development including:*
 - *Service and Supply Base*
 - *Partial Oil and Gas Processing Facilities*
- *Guadalupe Dunes Energy Management*

While many LCP policies relate to possible offshore energy development, the section entitled Offshore Oil and Gas Development is the present adopted policy direction for San Luis Obispo County. These policies were developed to reflect the requirements of the California Coastal Act; however, the county was generally unfamiliar with offshore leasing procedures and potential issues related to offshore energy development. Since the development of these policies, the county has participated in a number of OCS Lease Sales, development of three Five-Year OCS Oil and Gas Leasing Programs, review of projects occurring in Santa Barbara County, and its first application for onshore facilities related to an offshore oil project. These have all provided valuable information concerning issues and impacts that have or could occur from development of offshore energy.

3.4 Summary of Relevant Coastal Act and Local Coastal Plan Policies

The policies contained in the LCP and in lease sale position statements are summarized below:

Coastal Dependent Criterion: An underlying Coastal Act policy incorporated into the county's LCP is that development must be "coastal dependent" to be sited on or adjacent to the sea. Coastal dependent refers to those uses which could not function at all if not located there. Recognized coastal dependent uses include: ports and commercial fishing and aquacultural facilities. Coastal dependent uses have priority over other uses, however such uses are required to be consolidated within or adjacent to existing sites. Further, no siting is permitted within a wetland.

Coastal Dependent versus Coastal Related Industry: The Coastal Act distinguishes between coastal dependent and coastal related development and uses. Section 30101 of the Coastal Act defines a coastal dependent development or use as:

"...any development or use which requires a site on or adjacent to the sea to be able to function at all."

In 1979, the state legislators amended the Coastal Act by adding Section 30101.3, which defines a coastal related development as:

"...any use that is dependent on a coastal dependent development or use."

The distinction which the 1979 amendment established is quite important when addressing industrial land uses in the coastal zone. Onshore support facilities for offshore oil development can potentially be either coastal dependent or coastal related. Most onshore facilities which support offshore petroleum development do not require a site on, or adjacent to the sea to be able to function. While both coastal dependent and coastal related development are listed among priority uses in the Coastal Act, a coastal dependent industry is further eligible for consideration under Section 30260 of the Coastal Act. Section 30260 provides that a coastal dependent industry which cannot be feasibly accommodated consistently with other requirements of the Coastal Act may nonetheless be permitted if:

1. **alternative locations are infeasible or more environmentally damaging;**
2. **to do otherwise would adversely affect the public welfare;**
3. **adverse environmental effects are mitigated to the maximum extent feasible.**

Marine Terminals: The LCP states that no new marine terminals shall be permitted north of Shell Beach. Expansion of existing marine terminals or construction of additional onshore pipelines are preferred over construction of new marine terminals. Further, if a marine terminal does not require an ocean site to function, then it must be setback from the ocean.

Pipelines: Biological field surveys are required to be conducted for sensitive resource areas to minimize impacts of pipeline placement. In addition, pipeline segments are required by the federal Department of Transportation to be isolated by automatic shut-off valves. The county has the option to impose additional standards where appropriate. Consolidation of pipelines is also required.

Crew Boats - Port San Luis: In October 1984, a Crew Boat Siting Study was initiated by the county in order to determine whether a suitable location for a crew base existed in our county. A task force, similar in composition to the one created for this Plan, was formed. Of the various sites evaluated, the Union Oil Pier at Port San Luis was identified as the site which would cause the least amount of impacts.

In September 1987, the county's LCP was tentatively approved for the Port San Luis area. The current LCP stipulates that oil-related uses, including crew boats associated with exploratory drilling activities, are permitted "conditional" uses subject to the following findings:

- *alternative locations are infeasible or more environmentally damaging*
- *to do otherwise would adversely affect public welfare.*
- *existing and projected services would not be significantly impacted.*

- *impacts would be mitigated to the maximum extent feasible.*
- *ordinances are enacted requiring permits, conditions, hearings, etc.*

Other oil-related uses associated with development drilling, as well as new or expanded facilities (applicable to any development requiring a coastal permit), require an LCP amendment, and an approved specific plan, as well as submittal of a development plan.

3.5 Policies Addressed By This Element

The county has developed relatively well defined and consistent policies addressing offshore leasing. Possible revisions to these policies will be considered in the "Leasing Issues" chapter. Alternative implementation strategies, in addition to commenting on leasing programs, will also be evaluated in the leasing chapter. Few policies exist to guide the county in evaluating the types of onshore facilities which are appropriate and, if so, under what conditions.

This plan will address some of the major issues with regard to siting an onshore processing facility and propose general siting criteria. Issues associated with other types of onshore support facilities will be only briefly addressed. These may relate to: siting of a supply base or multi-use harbor, expanding an existing marine terminal or siting of a new terminal, refinery siting, crew boat operations at Port San Luis, in addition to other activities. Thus, this document is not intended to address the full range of issues associated with offshore oil and related onshore activities.

3.6 How to Locate Policies

At the end of each issue chapter policies and recommendations are presented. These involve either revisions to existing policies or formulation of new policies. Chapter one, Introduction and Policies, summarizes the chapter policies and recommendations.

The county's existing energy-related Local Coastal Plan policies are available at the Department of Planning and Building. In addition, the county's comments regarding previous lease sales, five year programs, and other OCS related activities, can be found at the Department of Planning and Building.

CHAPTER IV: LEASING

4.1 Outer Continental Shelf Leasing

Offshore oil leasing occurs prior to exploration and development. The federal government through the Department of Interior, Minerals Management Service (MMS) controls the mineral rights to the waters of the Outer Continental Shelf (OCS), lying between 3 and 200 miles offshore. The waters within 3 miles of the coastline are controlled by the State, through the State Lands Commission (SLC).

These state and federal waters are divided up into 9 square mile tracts. The MMS and SLC periodically conduct lease sales in which oil companies can bid on these tracts. The Secretary of the Interior develops a 5-Year Leasing Plan/Schedule which specifies when and where lease sales are to be held during the forthcoming 5-year period.

The federal sales generally encompass large numbers of tracts. Two major lease sales have occurred in federal waters offshore San Luis Obispo County, Lease Sale 53 in 1980 and 73 in 1984. (Figure IV-1). However, many of these leases have since expired as have five tracts that were leased off Morro Bay. Five active leases are located directly off the southern county line, and numerous others to the south offshore Santa Barbara County (Figure IV-1). The proposed five year plan for 1992-1997 included 87 tracts located in the Santa Maria Basin and the Santa Barbara Channel. All 87 tracts were deleted from this program because of the lack of scientific information and intense opposition from state agencies and local communities.

Leasing and development have occurred in state waters offshore portions of southern California. However, no leasing in state waters has yet occurred offshore this county. The California state legislature has excluded certain state owned tide and submerged lands from oil and gas extraction activities. The state waters offshore San Luis Obispo County are among those areas which are called oil and gas sanctuaries.

As part of the process, the California Coastal Commission reviews the proposed notice of sale for consistency with the California Coastal Management Plan. If the Coastal Commission determines that the sale is inconsistent with the Plan, MMS may not proceed directly with the sale. The Commission's determination may, however, be overridden by the U.S. Secretary of Commerce. If the Secretary finds either that the Coastal Commission's decision would result in a significant impairment of national security or national defense, or that an override of the Commission's decision would be consistent with the objectives of the Coastal Zone Management Act (CZMA), would not cause unacceptably adverse environmental damage, would not violate provisions of the Clean Air Act or Clean Water Act, and could not be replaced by an alternative action consistent with the CZMA. If a sale proceeds, the Secretary of Interior must consider

Figure IV-1
Active leases from previous lease sales

the Governor's comments on the "size, timing, and location" of the sale prior to issuing the final notice of sale.

4.2 County Role in OCS Leasing

The county's role in OCS leasing is advisory. The county can submit comments on the Department of Interior's 5-Year Leasing Plan and on the individual lease sale they propose. Because the Secretary of the Interior is required by the Outer Continental Shelf Lands Act Amendments (OCSLAA) to consider comments of the Governor of the affected state, the county provides comments via the Governor's office. The Governor consolidates local government comments together with those received from state agencies, and transmits them along with recommendations he/she formulates to MMS. The county also provides comments to the California Coastal Commission, who is responsible for reviewing impacts of the lease sale, on the States Coastal Zone Management Program. The Coastal Commission, in turn, provides comments to the Department of the Interior.

The lease sale process involves a number of steps occurring over a two year time period. The county normally provides comments three times during this process: At the scoping meetings conducted by MMS, following release of the Draft Environmental Impact Statement (DEIS), and following release of the Final EIS and Final Notice of Sale.

4.3 Public Participation in Leasing Decisions

Participation in county and MMS hearings on lease sales is the primary means by which interested individuals and organizations influence leasing decisions. The County Board of Supervisors has held public hearings to consider public comments on the Draft and Final EIS and on the Notice of Sale. At the Board of Supervisor's hearing, county staff analysis and public comments are considered by the Board as part of adopting a county position on the sale.

Members of the public may further affect leasing decisions through the electoral process (i.e. local, State, Congressional, and Presidential elections). The president has the most influence over leasing through the selection of a Secretary of Interior. For example, the next president may determine whether to carry out the California lease sales, the processes for which are currently underway.

Another avenue open to the public is through contacts with Congressional representatives concerning pending leasing-related legislation.

Interested persons may keep apprised of leasing as well as other offshore energy related activities through a variety of means including:

- *Contacting the county's Energy and Natural Resources division for the current status of leasing activities;*

- *Contacting the California Coastal Operators Group (CCOG) which acts as representatives to oil companies and associated businesses operating in the Ventura, Santa Barbara, and San Luis Obispo County area.*
- *Contacting members of the county's Offshore Energy Task Force, which is comprised of oil industry and environmental, as well as other interests.*

4.4 Types of Leasing Issues

A number of issues have been raised concerning the Federal Five Year Leasing Schedule and individual lease sales. Generally, these issues concern the size, timing and location of lease sales, the regulatory framework under which such sales occur and the environmental assessment process used in arriving at lease sale decisions. This chapter is to discuss these leasing issues in more detail.

There is a distinction between leasing and development issues. Leasing issues deal with questions of "if" and "where", as opposed to "how", development occurs. Lease sale stipulations, where they are applied, provide general direction on "how" development may occur. Questions pertaining to areawide, cumulative and long-term impacts of offshore oil activities are most important to consider at the lease sale stage. Once a lease sale takes place and resources are discovered, development usually follows. Thus, involvement at all stages of the lease sale process is crucial.

Leasing issues can be divided into specific concerns about: 1) the environmental, economic and physical impacts of leasing; 2) the procedures used in the lease sale process; 3) concerns about national security and energy supplies; and 4) the potential for increased conservation and development of renewable energy resources. There is disagreement over the degree to which these impacts may occur, where and how they occur, and their effect on the county's economy. Though many of the impacts described above do not directly result from leasing, lease sales set the stage for subsequent development. These issues are directly related to overall questions concerning the pace and extent of leasing, and are discussed below.

Air Quality: Emissions from offshore platforms are transported onshore where they combine with other emission sources to increase air pollution. In some cases this will contribute to exceeding some of the state and federal air quality standards. Disagreement exists over the degree to which offshore sources contribute to onshore air quality impacts. Since federal standards are less stringent than state standards, the state, along with California coastal counties, have argued for implementation of stronger air quality standards for OCS projects. Recent amendments to the Clean Air Act may provide those types of standards. The air quality chapter provides a more detailed discussion.

Water Quality and Marine Life: Impacts result primarily from oil spills and other discharges into the environment. Tanker accidents are the main cause of oil spills. Thus, coastal counties, as well as state agencies, have proposed that oil be transported via pipeline

wherever feasible. While spills from platforms are less likely, they can also occur. To avoid potential impacts to water quality and marine life, the county has recommended against leasing in sensitive areas and for providing buffers around resource areas.

Another water quality concern involves the discharge of drilling muds and cuttings. These materials are used in conjunction with drilling operations and may contain constituents harmful to marine life. Such discharges are primarily governed through Environmental Protection Agency permits in the OCS, and Regional Water Quality Control Board permits in state waters. Disagreement over the fate and effects of the muds and cuttings materials continues to exist within the scientific community.

Land Use: At the lease sale stage, concerns are raised regarding availability of appropriate areas to accommodate onshore support facilities, as well as the pace at which these facilities are constructed. In addition, the effect of such development on future land use patterns, and on county plans and policies are important considerations.

Significant land use conflicts may arise due to the siting of onshore facilities in areas with limited public services to support industrial development or in areas which have surrounding incompatible uses. Some of these issues may be easily resolved, while others, due to the nature of a particular location, may not be. The siting evaluation in Chapter VIII evaluates land use impacts related to processing and treatment facilities siting.

Socioeconomic: Since the early 1980's, oil and gas development in the Santa Barbara Channel and in the Santa Maria Basin north of Point Conception has increased. This new development has heightened the demand for onshore oil and gas treatment, storage, and transportation facilities in the tri-county area (Ventura, Santa Barbara, and San Luis Obispo Counties). Because this development may also result in large numbers of people moving into the region, these counties have required that the companies involved in offshore oil and gas projects participate in the Tri-county Socioeconomic Monitoring and Mitigation Program (SEMP). The purpose of this program is to document the ongoing socioeconomic impacts of each project, and to provide an equitable means for mitigating impacts. Development of onshore related oil facilities may also have benefits in the form of additional tax revenues and, in some instances, job opportunities.

Commercial Fishing: At the lease sale stage, the primary impact on commercial fishing resources and the fishing industry is "area preclusion." This results when the use of historical or potential future fishing grounds may be precluded because of placement of oil platforms and subsea structures, or through reductions in fishing yield as a result of oil spills and discharge of drilling muds. Impacts from geophysical survey impacts are also of concern at the pre-lease stage. Other issues may arise over the potential displacement of fishing vessels by oil crew and support vessels because of limited harbor space. The issues raised in connection with these impacts concerns their significance upon commercial fishermen, the local economy, the availability and price of food resources, and to what extent mitigation of these impacts is possible.

Tourism: The offshore oil impacts to tourism commonly identified with the lease sale stage include impacts of a possible major oil spill and impacts from conflicts arising from nearshore and onshore oil-related activities. For example, the Unocal oil storage tanks at Avila Beach preclude direct lateral coastal access to Pirates Cove from Avila Beach as well as impacting coastal views. Likewise, the Unocal pier and marine terminal and associated oil tanker onloading operations conflict with recreation and tourism uses in the harbor.

Cultural: The county has many archeological sites located onshore and some that are submerged in the offshore areas. Many of the sites are from the Chumash and are easily disturbed or destroyed by development. Some sites are over 9,500 years old.

4.5 Procedural Issues

The OCSLAA gives the Secretary of the Interior broad, discretionary power to conduct lease sales. However, the Secretary is required to adhere to additional provisions of the OCSLAA which provide for participation of affected states, and further, to ensure compliance with the National Environmental Policy Act (NEPA). A number of procedural concerns have been raised concerning how the lease sale process is administered. These are summarized below:

Inadequate Environmental Analysis: All the lease sale documents, including the various 5-year leasing schedules prepared by the Department of Interior, Minerals Management Service have been judged by most coastal counties and states to be inadequate because of the limited environmental analysis they contain.

Objectivity: In addition, the environmental documents are prepared by MMS and are for the purpose of justifying lease sales which they have proposed. The conclusions reached in these documents relating to impacts have appeared to be somewhat limited in scope.

Areawide Leasing Too Broad: The areawide approach to leasing does not provide for a meaningful assessment of impacts. Moreover, this approach, because of its lack of focus, makes reviewing and preparing for possible impacts very difficult. The Lease Sale 95 EIS, for example, would have covered the area between the Monterey-San Luis Obispo County line and the Mexican border, from 3 to 200 miles offshore. Proposed lease sale 163 (scheduled for 1996), is smaller but failed to adequately consider the cumulative impacts of existing and proposed leases.

Opportunities for Meaningful Participation: Public and local government opportunities for participation in the lease sale process have been extremely limited, including the location of Draft EIS hearings, and the limited comment period. In addition, past EISs have failed to adequately incorporate or respond to the comments of state and local governments.

Fair Market Value: The OCSLAA, Section 18(a)(4), requires that leasing activities be conducted to assure that the federal government receives fair market value. In the absence of

the OCSLAA defining fair market value, the Secretary of Interior has defined it as the amount a willing owner would sell such property to a willing buyer. Concern has been expressed over the fact that accelerated leasing, as provided by the 5-Year OCS Leasing Schedule, may result in less intense competition and lower bids for some tracts.

4.6 Other Issues

Need for Additional Oil: An important issue concerns whether the need for leasing has been adequately demonstrated by the Department of Interior. The EIS's prepared for Lease Sales 53 and 73, and the 5-year Leasing Schedule, only summarily discussed this issue. These documents, for the most part, rely on the National Energy Policy adopted by Congress in 1977 and the OCSLAA of 1978, both of which are intended to expedite leasing and development of the nation's offshore energy resources. Several national energy policy bills are currently being considered by congress. However, projections contained in Department of Interior's 5-Year Leasing Program (Mid-1987 to Mid-1992) cite doubling of U.S. oil imports over the next decade, despite the contributions from proposed OCS leasing. The report further advocates increased energy efficiency and utilization of alternative energy. Thus, an integral part of the "need/benefits" question is renewable energy and conservation potential. Many argue that such relatively benign alternatives afford greater net environmental and economic benefits in the long-term than expanded offshore oil development as proposed in the current 5-year OCS Leasing Program. Development of a "comprehensive" national energy plan which would consider these alternatives is recommended.

Timing of Lease Sales and Phasing: Phasing is an alternative which local government has requested the Department of Interior consider as one means to minimize effects of lease sales. Once a lease sale takes place, phasing would control the timing of development of leased tracts. From the standpoint of local government, impacts could be predicted more easily and planning to accommodate these activities would be more effective.

Coastal Commission Consistency Review: The California Coastal Commission had in the past reviewed leasing actions for consistency with the California Coastal Management Plan. However a federal court in reviewing Lease Sale 53 ruled that the Commission did not have the authority to review consistency at the lease sale stage. Legislation may be proposed in the future to further clarify the Commission's role with regard to reviewing federal offshore oil leasing decisions.

4.7 San Luis Obispo County Position on Leasing

San Luis Obispo County has historically adopted a position opposing leasing 20 miles around Morro Bay and 12 miles around the southern range (the Santa Maria River) of the California sea otter. This position has evolved from previous comments submitted by the County Board of Supervisors and Area Council of Governments in response to the Federal Five-Year OCS

leasing plans, Lease Sale 53, Lease Sale 73 and Lease Sale 95. The 12-mile buffer is proposed to ensure protection of the California sea otter range and other resources.

Examples of resources which could be impacted from leasing include: the Morro Bay estuary and watershed, the sea lion haul out areas along the Montana De Oro coastline, the southern sea otter, whose recognized range extends to the Santa Maria River and the Nipomo Dunes complex. The proposed buffer areas would provide additional oil spill response time, without which containment and recovery of a spill are extremely difficult in the typical sea conditions of the area above Point Conception. A number of federal and state agencies have also supported establishing these buffer areas, citing the need to protect specific marine mammals and fishery habitats.

The county submitted extensive comments on the 1992-1997 five year leasing program. The major points are included in Chapter III, Policy Base.

The county also submitted comments on the Draft Environmental Impact Statement for the 1992-1997 five year leasing program. The following are the major recommendations adopted by the Board of Supervisors:

1. That the DEIS be found incomplete because of inaccurate assumptions relative to existing infrastructure described in the base and high case scenarios and lack of mitigation for major impacts identified in the cumulative case. A review of the process by which these assumptions are developed should be completed.
2. That the final EIS focus on the specific resources and ecosystems of the Santa Maria Basin and Santa Barbara Channel since these areas will incur the impacts of the proposed lease sale. If leasing does occur, EIS's specific to the Santa Barbara Channel and the Santa Maria Basin should be completed before the lease sale. Prior to preparation of the EIS's the studies previously recommended by the County of San Luis Obispo and the National Academy of Sciences should be completed.
3. Tracts within the Santa Maria Basin be deleted from consideration in this 5 year program and DEIS because the scientific information about the area is currently inadequate. To date, a comprehensive, up-to-date and scientific information base for objective and reasonable leasing decisions regarding the Santa Maria Basin and San Luis Obispo County does not exist. This data base should be fully developed before a decision to lease is made.
4. The final EIS should include the Pacific Region in a similar analysis as that of Alternative III., Slowing the Pace Alternative V., Establishing Coastal Buffers and Alternative VI., Exclude Certain Seafloor Features.

5. That the DEIS be found to be inadequate since information is portrayed in such a manner as to justify the leasing program and does not provide an objective and systematic analysis of the affected environments and the impacts to those environments.

Additional considerations in developing the county's policies have included: recommend for deletion where the presence of severe geohazards occurs on certain tracts; unresolved concerns regarding air quality; protection proposed for high yield fishing areas; avoidance of vessel traffic; and projected socioeconomic effects.

4.8 Policies

1. Lease sale stipulations, if responsibly drafted, can protect the natural resources of the county and promote county interests. In the lease sale process, the county will adopt positions requesting stipulations that require the following:
 - Lease sale stipulations prohibiting lessees from using an offshore storage & transfer vessel (OS&T) for the purposes of processing and transporting OCS production, and requiring instead that all offshore oil and gas production be piped onshore for processing and movement to market.
 - Agreements requiring that before further leasing, MMS conduct a baseline biological study which focuses on this county's offshore waters, or, if leasing occurs, a stipulation requiring the study prior to initiating development of any tracts leased.
 - Lease sale stipulations requiring site-specific biological surveys intended to define the presence of and provide protection for important biological resources. The survey shall define areas of special biological significance and higher productivity, diverse and/or complex ecosystems which include high-intensity fin-fish/shell fish areas, critical habitat and rare/threatened, endangered species, unusual, rare, uncommon ecosystems, areas having an abundance or high diversity of species, and areas critical to the life cycles of species (i.e. spawning, feeding, rearing or migratory areas).
 - Protection for biological resources identified in biological surveys shall include avoidance of areas, modification of operations, and provision for a regular monitoring program during operations with authority to require reasonable corrective measures to mitigate identifiable impacts.
 - Maintain the county's Offshore Energy Task Force during lease sale review and comment periods to enhance the flow of information to the public.

2. Controlling the overall pace of offshore development can reduce the level of peak cumulative impacts and increase opportunities for orderly change in the very limited parts of the county which may prove suitable for onshore support facilities. To accomplish these purposes, the county will adopt a position which requires:
 - Leasing agencies to comprehensively study the impacts of the development of already leased tracts offshore the county (most of which lie within the buffer zone defined by the county) before additional leasing occurs.
 - Leasing agencies to recognize the difficulties in accommodating onshore facilities required for development of already leased tracts and to resolve such difficulties before any additional leasing occurs.
 - Require that all future pipelines and processing facilities be consolidated to the maximum extent feasible.

3. San Luis Obispo County has consistently advocated policy positions which have not been adopted in federal lease sales. To provide further protection of biological and coastal resources, and to address the general unresponsiveness of the Minerals Management Service (MMS) to these county policies, the county will adopt a position which requires:
 - Permanent protection and management of the county's coastal resources using the National Marine Sanctuary and the National Estuary Programs as vehicles for protection and management.
 - Future lease sales and developments be consistent with the county position that no drilling be permitted north of Morro Bay, within 20 miles of Morro Bay, or within 12 miles of the southern boundary of the California sea otter range.
 - That a 15 mile buffer zone of no offshore energy activities be established around the Santa Lucia Bank to protect the rich commercial fisheries and other natural resources.
 - Opposition to future lease sales until concerns including leasing in sensitive areas, the county-proposed buffer zones, understatement of impacts, overly ambitious leasing schedules, failure to consider the need to plan for onshore support facilities, and the potential roles of conservation and alternative energy resources are adequately addressed by federal agencies.
 - Pursuing maximum public awareness and participation in lease sales, as well as assuming an advocacy role in affecting policy, maintaining continued clear county policy direction, and coordinating efforts with other coastal counties.

- Actively supporting legislation consistent with the county's adopted leasing policies.
- Formal opposition to exploration and development plans submitted to MMS in the event these activities are inconsistent with the county's leasing policies (i.e. where such activities are proposed in locations where the county had previously objected to leasing).
- Disapproval of proposals for onshore support facilities that are incompatible with adopted leasing policies.
- Participation to advance county policies if either the current 5-Year OCS Leasing Plan or any lease sales are challenged in court on issues directly or indirectly affecting the county.
- Review and comment on proposed lease sales and leasing-related legislation affecting other areas in instances where we share common concerns and there may be potential impacts to our county.
- Continue the practice of providing for public discussion before the Board of Supervisors in all instances where the county has the opportunity to comment on lease sales or on leasing-related issues so that interested individuals and organizations are provided maximum opportunity for input.

CHAPTER V: BIOLOGY

5.1 Background

The county's biological resources, both onshore and offshore, would be affected through offshore oil and gas exploration, construction, and production activities. This chapter will review some of the county's important coastal resources, significant biological issues, and ongoing or planned biological studies. The chapter will also present policies and recommendations to protect these resources.

San Luis Obispo County spans 96 miles of coastline and has many areas with important habitat, recreational, and agricultural resources. Those areas include the lands surrounding Nipomo Dunes, the north coast areas and the Morro Bay watershed. The county's coast contains spectacular scenery and pristine waters. Rocky shores alternate with unspoiled sandy beaches. Other characteristics of the coastal land mass include low volcanic and tectonic mountains, fertile plains, and extensive dunes. Millions of tourist visits are recorded each year because of the scenic, aesthetic and recreational values of the coast and the coastal waters.

The north coast is characterized by the rugged headlands to Big Sur. The rocky shoreline along Hearst Ranch is highly valued for the offshore views of scenic cliffs and rocky points. The beach, sandspit, and extensive wetlands of Morro Bay have been nominated by Governor Wilson for inclusion into the National Estuary Program administered by the Environmental Protection Agency. The sheltered coves and beaches of Avila and Pismo Beach state parks provide a contrast to the marine terrace and offshore rocks of the north county coastline. The Monterey Bay National Marine Sanctuary extends south to Santa Rosa creek near the town of Cambria.

The region contains a rich variety of sensitive coastal habitats. It includes wetlands and estuaries, rocky intertidal zones, long stretches of open sandy beach, coral communities, numerous offshore rocks used by birds and marine mammals, and hard-bottom substrate. Large environmentally sensitive kelp forests stretch along the coast. Major feeding and resting areas exist for migratory birds.

The offshore waters provide for a rich biotic diversity resulting from factors such as the location in a transition zone of meteorological and oceanographic provinces, a year round upwelling extending from Point Sal to Point Conception which is one of the most significant nutrient sources in the entire North Pacific Basin. There are strong seasonal upwellings at Point Piedras Blancas and Point Buchon and productive wetlands such as the Santa Maria river mouth and the Morro Bay estuary. Some of the most intense biologic research on the California coast has been done at Diablo Cove, while significant benthic communities at the Santa Lucia Bank and Arguello Canyon remain understudied. Archaeological sites of the Chumash people exist in dunes and coastal terraces along the coast.

Figure V-1
Some Threatened or Endangered Species in the County

Threatened and endangered species in the region include the California least tern, the California brown pelican, the southern sea otter, the clapper rail, and four species of sea turtle. Seven endangered species of whale, the gray whale, the humpback whale, the blue whale, the fin whale, the right whale, the sei whale, and the sperm whale may be found in the area. The entire population of gray whales in the eastern Pacific migrates through the area twice each year, as does half the northern Pacific population of humpback whales.

5.2 Description of Resources

Marine: In general, site specific biological resources offshore San Luis Obispo County are not well known. Other resources have been well defined through studies and different environmental impact reports. The marine environment of San Luis Obispo County is characterized by intertidal regions of sandy beach, rocky shoreline, an estuary, and offshore regions ranging from sand and mud flats to rocky reefs with kelp beds. The area also has many small to medium size rocky outcrops. These physical features attract marine mammals, provide a number of areas for roosting and nesting land for seabirds, and support an abundance of fish. Many of these are listed as endangered, such as the least tern and brown pelican, or threatened, such as the southern California sea otter, whose range extends along the entire length of our county's coastline. The county's proposal to create a Central Coast Marine Sanctuary contains more details on the biological significance of the area. Native and migratory endangered and threatened species are shown in figure V-I. Hundreds of fish species also inhabit the varied the varied marine settings, many of them are important to sport and commercial fisheries.

The county's north coast region, which extends into Big Sur, is characterized by steep cliffs descending to the rocky, sometimes inaccessible, shoreline below. The area is known for remote coves and is inhabited by seals, otters, and many other types of marine life. Off Cape San Martin, elephant seals breed and have pups. Similarly, Point Piedras Blancas to Point Estero are important seabird and marine mammal areas. The kelp beds lying off crescent-shaped San Simeon Cove provide a haven for a number of fish species, as kelp beds do everywhere.

Morro Bay is an important resting, feeding and breeding area for migratory waterfowl and Morro Rock is one of four breeding sites within the county for the endangered Peregrine Falcon. The nomination package for the National Estuary Program and prepared by the Morro Bay Task Force provides a detailed description of the biologically significant areas.

The rugged coastline stretching from the Morro Bay sandspit, south to Hazard Canyon, Spooners Cove, Point Buchon, and Lion Rock and beyond to the Point San Luis Lighthouse and breakwater, contains diverse physical features which contribute to its biological significance. Above this coast lies the marine terrace and coastal mountain range, a portion of which is occupied by the 7000-acre Montana de Oro State Park. The chaparral, Bishop pine and coastal live oak provide important wildlife habitat. Ranch land also occupies a portion of this area, as does the Diablo Canyon Nuclear Power Plant. The Montana de Oro Pecho coast is one of the

largest seal and sea lion haul-out areas for pupping, resting and molting. Harbor seals also breed here. The Pecho coast also includes a mainland haul-out for California sea otters.

Figure V-2
Ecologically Significant Marine Areas

Below Point San Luis, the coastline turns east and south forming Avila Bay. Though adjacent to developed communities, a variety of marine life is found in the bay, including many seabirds, sea otters, seals and sea lions, and fish. A marine terminal is located at Avila Beach. Tankers load crude and partially refined product for shipment to other destinations. The tankers unload gasoline for onshore distribution.

South of Pismo Beach lies the Nipomo Dunes which have been recommended for nomination to a National Seashore status and is currently considered a National Natural Landmark by the Bureau of Land Management. The dunes contain Oso Flaco Lake and the Dune Lakes and a unique variety of native plants, some them protected species. A large portion has been designated a preserve and is being managed by the Nature Conservancy. While other portions of the dunes have been impacted by the Unocal Refinery and the Guadalupe oil field, the dunes remain a vital ecological resource. Further south lies the Santa Maria River mouth wetlands, approximately along the county line. Figure V-2 is a map that summarizes some of the ecologically significant marine areas. The maps in figures V-3 through V-6, found at the end of the chapter, show some of the important resources that are offshore and along the coast of the county.

5.3 Impacts

Development of offshore oil and gas has the potential to impact biological systems at all stages, starting with seismic surveys through exploration and continuing through construction, operation and abandonment. Nearshore or onshore support facilities may impact biological systems, as discussed below.

5.3.1 Offshore

Seismic Survey: Seismic survey activities are known to cause behavioral changes in fish. Further, it has been suggested, based on information available for anchovy larvae, that some larval forms might be harmed by seismic survey activities. While it has been suggested that gray whale migration patterns may be affected by seismic testing, limited studies conducted thus far by MMS do not identify any evidence of interference. The State Lands Commission has determined that for future seismic surveys proposed for state waters, an Environmental Impact Report shall be required. The effects of seismic testing are further discussed in Chapter VI, "Fisheries Issues".

Platform and Pipeline Placement: Bottom dwelling organisms may be impacted through burial, sedimentation or increased turbidity during placement of platforms, pipelines, cables or other subsea structures. With pipelines, the major impacts occur nearshore in the intertidal and shallow subtidal zones of the landfall. Other impacts occur through laying of the pipeline. The lay barge technique usually results in less impact than the bottom-pull method.

Impacts from platform and pipeline placement may be reduced through avoiding ecologically productive or sensitive habitats, although as indicated, site specific biological information is

very sparse. San Luis Obispo County has requested that MMS include a lease sale stipulation mandating site-specific offshore biological surveys prior to: a) any drilling activity; and b) the placement of any structure for exploration or development.

Oil Spills: A major oil spill remains the single most dramatic threat to biological resources off the coastline although chronic impacts from exploration and operation may be more damaging over time. Spills may result from a variety of events: well fire or blowout, pipeline rupture, vessel collision or grounding while enroute through the area or during on-loading or off-loading crude oil at a marine terminal. While major spills are uncommon events, they continue to occur on a worldwide basis. The extremely limited effectiveness and lack of response equipment in the conditions common off our coast has caused considerable concern over continued leasing and development. Additionally, adequate facilities to care for injured seabirds and marine mammals have not yet been provided, although such facilities are required by stipulations included on development occurring on Lease Sale 73 tracts. The California sea otter is particularly vulnerable to spill impacts because of the otter's dependence on its fur for insulation. In reviewing proposed development, the Fish & Wildlife Service is required to conduct a consultation assessing the extent to which impacts from a proposed project could threaten the viability of the sea otter population. The subject of oil spill prevention and response will be further addressed as part of a separate study being undertaken by the county.

Drilling Muds and Cuttings Discharges: Within the Outer Continental Shelf (OCS), discharges of drilling fluids are regulated by the Environmental Protection Agency (EPA). In the past, a single permit was issued for all operations occurring in the Pacific OCS. This general National Pollution Discharge Elimination System (NPDES) permit allowed discharges of muds and cuttings containing specified concentrations of various chemical constituents. This process was intended only as a temporary mechanism to permit discharges until the effects of these discharges could be further assessed and new regulations adopted. The NPDES permit has since expired. EPA is now issuing permits on a case-by-case basis until a new General Permit can be developed. The only individual permit issued (as of March 1988) has been for Platform Gail offshore Ventura County.

The State Water Resources Control Board, through the Regional Water Quality Control Boards (RWQCB), issues discharge (NPDES) permits in state waters. The Coastal Commission is also responsible for water quality issues to the extent they are related to impacts on coastal resources. Thus, the Commission has considered the effects of these discharges in their review of Coastal Development Permits for drilling in state waters. Environmental Impact Reports prepared for leasing and development projects in state waters in more recent years have recommended onshore disposal of drilling muds rather than discharge at the platform. Moreover, the State Lands Commission has supported onshore disposal over ocean discharge.

Disagreement continues within the scientific community over the fate and effects of drilling muds and cuttings. This is due to the difficulty involved in measuring effects, particularly over large areas and over the long-term, and because only limited field studies have been conducted on the West Coast. However, studies which have been conducted note that the major effects

have been due to burial of benthic (bottom-dwelling) organisms in the immediate area of the platform. A radius of 656 feet around a platform and 320 feet around an exploratory rig, were found to have been affected in the Mid-Atlantic Study referenced in the Coal Oil Point EIR. Other changes may arise from topographic alteration, toxic effects, turbidity, and decreased oxygen. Cumulative regional impacts have been postulated, but are difficult to substantiate.

The chief concern with the issuance of a General NPDES Permit has been that such a generic approach fails to reflect site specific biological and physical diversity and related sensitivity.

5.3.2 Onshore/Nearshore

A wide range of potential biological impacts are associated with development of near and onshore support facilities. The nature of these facilities and associated impact areas are discussed in Chapter VIII. In general, the following types of potential impacts can be expected:

Onshore Pipelines, Processing and Treatment Facility: Numerous potential biological impacts were identified in the San Miguel EIS for the proposed onshore pipelines and an oil processing facility in the South County. The majority of biological impacts could be reduced to insignificant levels through physical mitigation measures, timing of construction to minimize unavoidable impacts, and, to the extent possible, modifying the facility location and associated pipeline corridors.

Many biological impacts from the San Miguel Project would result from construction of the pipeline through the dunes which are a prime example of sensitive habitat in the county. Pre-siting habitat and biological community surveys, route selection, corridor narrowing, restrictions on construction techniques, and re-vegetating the disturbed area were intended to mitigate these impacts over time. Nevertheless, future offshore development may require cutting through this corridor again or establishing additional corridors, thus defeating initial mitigation efforts. Therefore, a major question to be dealt with concerns the sizing of the first corridor and number of pipelines initially placed within it as well as the number of pipelines which may be required to accommodate possible future offshore platform development. Similar concerns exist in regard to processing sites, where the geographic area affected is more limited, but construction activity is more prolonged and intense, and where permanent habitat displacement can occur.

Fires and oil and/or hazardous materials spills at a refinery, processing facility, or along a pipeline, as well as offsite flow of oily water after a rain, may also affect biological resources. Onshore pipelines can be ruptured, resulting in oil spilling and reaching sensitive resources. Measures available to reduce these impacts include: emergency shut-off valves at stream crossings and other sensitive locations, fire prevention/response plans, oil spill contingency plans and equipment positioning, berming, continuous leak detection monitoring, facility siting near fire stations, double walling of pipe at and near stream crossings, and capture of oily runoff at the processing site.

The first step towards reducing the potential for biological impacts related to offshore oil and gas development and their associated onshore facilities is a thorough environmental review process. This will identify all potential impacts and establish mitigation where possible. These factors also need to be taken into account during the decision-making process. Avoidance of a potential impact area or situation is generally preferable to an engineering solution. To this end, it is important to have reliable information with which to make siting decisions.

Marine Terminals: Millions of barrels of petroleum materials are transferred each year through the Avila Beach and Estero Bay marine terminals. When oil tankers enter Port San Luis, Avila, Estero Bay or other existing or potential sites for on and off-loading petroleum products or crude oil, there is an increased risk of collision or grounding, particularly during bad weather conditions. This increases the risk of an oil spill. In addition, a spill risk is present during crude and product transfer operations when fires or other accidents may occur. Should existing marine terminals be expanded or new terminals sited, these risks would increase.

Crew Boat Operations: The operation of crew boats, could result in biological effects through discharges of oil and exhaust into the water during normal operations and collisions with marine mammals.

Helicopters: Helicopter traffic (used to transport crew and supplies) has the potential to disturb roosting and nesting birds, and hauled-out marine mammals, both of which are vulnerable to disturbance.

Supply Base: Significant onshore and offshore impacts, would be expected to result from a major supply base, if one is to be located along the county's south coast. These impacts would arise from pier and breakwater construction, dredging, degradation of water quality, disruption of wetlands, and alteration of significant landforms. These impacts, in turn, could substantially affect marine and terrestrial plant and animal life. The type and severity of impacts would depend upon the specific proposal.

5.4 Regulatory Setting

Over 60 plant and animal species in San Luis Obispo County have been identified as being of special concern. Some of these require special protection or consideration as a matter of law and others are generally recognized because of their complex contribution to the local and regional environment (e.g. Morro Bay estuary, Santa Maria River wetlands, Oso Flaco and the Dune Lakes).

Marine mammals receive special legal protection through the Marine Mammal Protection Act (MMPA). Whale, dolphin and porpoise are present in the marine waters of the county; some only pass through during migration while others may be found year round. The California sea otter receives special legal protection through the Endangered Species Act.

Seabirds are another group to receive special consideration. Their requirements for roosting and nesting areas along the coast often conflict with human uses and they are particularly vulnerable on land.

5.4.1 Federal Role

A number of federal, state, and county agencies are involved in the review of offshore oil activities. These agencies are charged with the statutory responsibility to enforce various regulations, many of which affect biological resources. For federal tract development the primary responsibility lies with the Minerals Management Service (MMS) of the Department of Interior. They are charged with administering lease sales as well as preparing the Environmental Impact Statements (EIS) for those sales. Various agencies submit comments to MMS during the Draft EIS review period. During this process, the U.S. Fish and Wildlife Service (USFW), the Department of Fish and Game and California Coastal Commission are primarily concerned with biological issues.

To respond to the responsibilities to protect biological resources, MMS has established special requirements. As part of Lease Sale 53, MMS Biological Stipulations 1 and 8 requires that lessees satisfactorily show that no special biological resources would be adversely affected by their actions. Oil and gas vessel operators and facility supervisors are required to participate in a training program that emphasizes the sensitivity of marine mammal and seabird sites that could be affected by their operations.

For Lease Sale 73 tracts, stipulation (Number 9) requires the Oil Spill Contingency Plan adopted for a project to ensure the availability of a care facility for mammals and seabirds and ensure that the best available cleaning and rehabilitation methods are provided.

During the development stage, the MMS is generally responsible for preparing an EIS. A recent trend, particularly where several agencies are involved, has been to establish a panel of affected agencies to manage the preparation and coordinate review of the environmental document. In the course of reviewing a development plan, USFW issues a "biological" opinion to MMS, outlining their recommendations concerning endangered species. This requirement for special consultation and impact assessment is required by the Endangered Species Act of 1973 (P.L. 93-209). The opinion must determine whether the project will cause "jeopardy" to population of threatened or endangered species.

The agencies involved in affecting biological resources and their respective statutory responsibility to enforce various regulations are outlined below:

The U.S. Fish and Wildlife Service (USFW) is the primary federal agency responsible for implementing regulations related to biological resources. This includes the Endangered Species Act of 1973 which provides protection for species listed under the Act and for their critical habitat. USFW also enforces the Migratory Bird Treaty Act of 1972, which seeks to protect birds, including seabirds. USFW and the National Oceanic and Atmospheric Association

(NOAA) share responsibility in implementing the Marine Mammals Protection Act, which limits the incidental taking of marine mammals.

The Environmental Protection Agency (EPA) enforces Section 404 of the Clean Water Act, which regulates development in Streams and Wetlands. The Army Corps of Engineers is responsible for Section 10 of the Rivers and Harbors Act, which regulates development in navigable waters, onshore and offshore.

5.4.2 State Role

Primary state regulations and agency roles concerning biological resources include the following:

The State Lands Commission is the trustee and steward of tidal and submerged lands. They are responsible for ensuring that lessees act in a manner which protects the offshore area's water and biological resources according to all applicable laws and regulations.

The California Water Resources Control Board provides protection for areas of special concern through designation of marine life refuges, reserves, ecological reserves, and Areas of Special Biological Significance (ASBS).

California Department of Fish and Game (DFG), preserves, protects and manages marine and terrestrial resources and regulates sport and commercial fishing. The California Endangered Species Act of 1970 (Sections 2050-2098, California Fish and Game Code; amended September 1984) and the California Native Plant Protection Act of 1977 (Sections 1900-1913, California Fish and Game Code) provide protection at the state level for species designated as threatened or endangered and requires consultation between the lead California Environmental Quality Act agency and the Department of Fish and Game for projects that may affect state-listed species. Sections 1601 and 1603 of the California Fish and Game Code regulate developments in onshore waters including intermittent streams.

The California Environmental Quality Act (CEQA) provides additional protection for animal or plant species which are not state or federally listed, but which meet criteria of "rare" or "endangered" as defined in Section 15380 of the act.

Under California's federally approved Coastal Management Program, the Coastal Commission must determine whether offshore oil and gas projects in the outer continental shelf can be sited consistently with the biological provisions (among others) of that program.

The California Coastal Act of 1976 regulates development and provides protection for biological resources in the coastal zone, which includes state tidelands and submerged lands. Provisions of the act related to onshore biological resources are administered by San Luis Obispo County.

5.4.3 County Role

The county's role includes providing recommendations to state and federal agencies and counties regarding projects beyond our jurisdiction. In cases where a project or portion thereof lies within its jurisdiction, the county has an active role which may involve processing land use permits, including coastal development permits and assuming a "lead agency" role for purposes of preparing the project's environmental assessment.

San Luis Obispo County has a comprehensive general plan that addresses resources in the county. The Land Use Element portion contains pertinent environmental and land use regulation policies. In order to implement the plan, the county has been divided into 13 planning areas, 4 of which are in the coastal zone. The Land Use Element designates "sensitive resource areas" (SRA) as a combining designation added to the land use category (zoning) that provides specific protection for significant resources.

San Luis Obispo County has an approved Local Coastal Program (LCP) and Coastal Zone Land Use Ordinance; permit authority was transferred to the county in March, 1988. The existing coastal policy is to protect sensitive habitats, wetlands, streams, terrestrial environments, including native vegetation, rare and endangered species, and dune vegetation; and marine habitats. The LCP designates "sensitive resource areas" and "environmentally sensitive habitat areas" as described in the preceding paragraph. In addition, the LCP includes specific policies pertaining to oil and gas projects with respect to biological resources.

5.5 Programs/Studies

A number of programs and studies address biological issues raised by offshore oil and gas development. A partial bibliography is available at the energy and natural resource division of the county. Certain important studies and programs are discussed below:

Marine Wildlife Contingency Plan: This plan is required to be developed by offshore operators to establish procedures to be followed in the event of an oil spill. The plan also includes an inventory of resources/animals that would be at risk in such a situation as well as the location of rehabilitation centers.

U.S. Fish and Wildlife Consultation: Federal law requires MMS to consult with USFW concerning marine life impacts on the OCS from proposed leasing or development activities. Under this provision, USFW issues a "biological opinion" regarding the particular project which MMS must either adopt or defend an action to the contrary.

San Luis Obispo County Emergency Response Study: The county Office of Emergency Services is conducting an analysis of current and potential offshore oil activities which may result in oil spills, as well as available methods to minimize these risks. Oil spill response procedures will also be evaluated. In addition, studies being conducted by other

jurisdictions (e.g. Santa Barbara County, Laguna Beach, Joint Central-Northern Counties Project) will be monitored.

Environmental Studies Programs: A number of biological studies have implications for coastal counties. These programs and studies are implemented by various organizations including the Minerals Management Service, the Seagrant program, NOAA, and universities. The purpose of MMS's Environmental Studies Program is to provide scientific information about the environment of a proposed lease sale. Many studies have been completed and much information gathered. However, the program has focused a good deal of these efforts on the areas to the north and south of the Santa Maria Basin, leaving the basin and its coastline without needed decision-making information. The Seagrant program or other organizations could be vehicles for future studies related to the Santa Maria Basin.

State Lands Commission: State Lands has recently completed a study of cumulative impacts from State Lands and OCS development. The county has provided comments and information to the Commission regarding this study.

5.6 Policies

1. The biological resources of the county have a long term value which is only partly economic. To protect this value should offshore oil development prove to be unavoidable, the county will adopt a position which requires:
 - All future pipelines and processing facilities be consolidated to the maximum extent feasible.
 - Adequately functional, sized, coordinated and staffed facilities for cleaning and rehabilitating seabirds and marine mammals be made available on the central coast prior to further leasing or development.
 - Biological surveys are conducted by lessees as part of the process of siting individual platforms.
2. General policies which reduce potential impacts of offshore oil and gas development on biological resources will be enacted. To implement such policies, the county will adopt a position which requires:
 - The lay barge method of laying pipelines be used offshore in coastal areas which have significant habitat values, unless the bottom pull, or another better method is found to be significantly less impacting to the environment.
 - The environmental review be focused to determine in other coastal areas whether the lay barge, bottom pull or other methods of laying pipelines offshore adequately minimize impacts, and require the environmentally superior method.

- Stipulations or conditions of approval which require that helicopters used to transport crew and/or materials to offshore platforms or other offshore oil-related projects avoid flying over areas significant to wildlife and also maintain a minimum 1000 foot altitude clearance.
3. Careful timing, location, and design and configuration decisions for specific offshore oil and gas exploration and development activities can lessen impacts on biological resources. To promote such decisions, the county will adopt a position which requires:
- Biological surveys be conducted by lessees as part of the preliminary work of siting individual platforms and pipelines.
 - Exploration and construction be conducted during times of the year likely to affect biological resources least, considering frequency of storms, breeding, migration, nesting seasons, seasonal upwellings and other factors.
 - Exploration and construction near sensitive species habitat (such as least tern nesting areas) be scheduled to avoid breeding and nesting seasons. Chart seasonal migrations, breeding, and nesting cycles to identify windows of exploration and construction.
 - Terrestrial surveys, including inventorying rare plants, be conducted as part of the preliminary work for any proposed onshore support facilities. This should take into consideration the various seasons migratory or transitory species may be in an area.
 - Pipeline routes avoid steep slopes and stream crossings and other fragile habitats where possible to minimize erosion.
 - A 15 mile buffer zone of no offshore energy activities be established around the Santa Lucia Bank to protect the rich commercial fisheries and other natural resources.
 - No drilling shall be permitted north of Morro Bay, 20 miles around Morro Bay, or 12 miles around the southern range of the California sea otter, to protect onshore, nearshore and offshore biological resources.

Figure V-3
The Santa Lucia Bank

Figure V-4
Nipomo Dunes & Northern San Luis Bay Intertidal

Figure V-5
North Estero Bay Rocky Intertidal Areas

Figure V-6
Cape San Martin - Pt. Piedras Blancas

CHAPTER VI: FISHERIES

6.1 Description of Resource

Fish have been harvested from marine waters off the county for as long as people have been present. This renewable resource will remain if harvested judiciously and not subjected to pollution or other stress.

The resource is used in a variety of ways. Commercial fishing includes the commercial harvest of fin fish and invertebrates by a variety of methods, and also includes kelp harvest and mariculture. Central Coast Salmon Enhancement has a successful program to raise and release salmon into the San Luis Bay. Sport fishing includes party-boat fishing in commercial passenger fishing vessels, recreational fishing from small private and commercial vessels, and surf and pier fishing. Subsistence fishing (licensed as sport fishing) from small vessels, surf zones or piers also occurs in the county. To aid in the goal of continuity for the fishing resource, energy management practices addressing fishing needs should be developed and adhered to.

Commercial Fishing: The commercial fishing industry includes many locally based, relatively small vessels (less than 85 feet in length) operating in coastal waters within 20 miles of shore and close to port. Larger vessels also come to fish the waters. A wide variety of fishing gear is used: Drift gill nets, set nets, trawl gear, hook and line gear, seines, and various traps and diving gear.

The two major fishing ports in the county are Port San Luis/Avila and Morro Bay. Ports outside the county, including Ventura, Santa Barbara, Port Hueneme, San Pedro and Moss Landing, may receive fish harvested in the region. Most vessels in the Morro Bay and Avila fleets fish by trolling hook and line, trawling, trapping, and gill nets. Dive vessels make up the balance. Most of the catch brought into the two ports is produced by trawling (the northern Santa Maria Basin is an especially productive trawling ground). When albacore and salmon are present, trollers come from the north (as far as Oregon) and south. Other vessels regularly come in search of groundfish. Figure VI-1 shows the pounds and value of the fish landed over the last ten years at Morro Bay and Port San Luis.

Commercial fishing's importance to the county economy includes the diversity it adds to the economic base, the income it provides to fishermen and the indirect support it gives to a variety of onshore jobs. Economically significant species harvested include dover sole, swordfish, halibut, salmon, shrimp, and albacore.

Commercial fishing attracts tourists and vitalizes harbor operations. Much of the catch is shipped to non-county markets. Fishing sales and purchases are integrated into the county's

Figure VI-1
Port San Luis and Morro Bay Fish Catch 1980-1989

economy. Most dollars received from catches sold at local ports are re-spent within the county economy.

Kelp is harvested in the county in the region north of Cayucos and occasionally near Avila. Several mariculture operations exist for species such as abalone, coho salmon, and oysters. Concern for impacts of oil development on the fishing industry extend from the pre-lease stage, in which seismic and similar testing may occur, through the lease sale, post-lease exploration, development, construction and operation phases, to abandonment.

Sport and Subsistence Fishing: Commercial passenger fishing vessels take people for offshore fishing from Avila and Morro Bay. Fishing occurs generally in nearshore waters, within 12 miles. Private recreational vessels for personal fishing may be launched from Port San Luis, San Simeon, or Morro Bay. Fishing for sport and for subsistence occurs from small vessels and from beaches and piers. One potential enhancement offered by offshore oil development is concentration of sport fish around structures (to the extent that sport fishers can gain access to the vicinity of such structures; see "U.S. Coast Guard" discussion below).

6.2 Regulatory Setting

The roles of local, state and federal agencies and other organizations and programs which affect the mix of interests between the fishing industry and the oil and gas industry are summarized below:

U.S. Coast Guard: The Coast Guard polices the safety zone extending 500 meters from the outer projections of platforms and excludes vessels over 100 feet from safety zones. It also establishes vessel traffic corridors.

Minerals Management Service (MMS): MMS Pacific OCS orders, lease sale stipulations, approvals, and notices to lessees may be used to reduce potential impacts to commercial fishing in OCS waters. Orders, stipulations, approvals and notices may address a wide variety of commercial fishing interests, such as criteria for locating platforms, approved times for exploratory drilling, requiring smooth surfaces on exposed pipelines, disposal of waste materials, and appropriate training.

MMS issues orders to all operators within an area or region. MMS issues stipulations when it leases the right to explore particular tracts and develop any oil and gas reserves discovered after input from other public agencies and private sources. Approvals issued for proposed projects may contain conditions which recognize commercial fishing concerns. Notices are issued to reflect changes in circumstances which may affect operations.

Federal Fisherman's Contingency Fund and Related Funds: The federal contingency fund and two related funds, one for oil spill loss and the other for gear damage. They are programs which compensate fishermen for loss and damage to equipment occurring

in OCS waters from petroleum industry activities in instances where no particular operator has the responsibility for providing compensation.

State Lands Commission: The California State Lands Commission fulfills a function in state waters similar to the MMS role in the OCS. The Commission also has a bonding program similar to the federal compensation programs, but it does not reimburse fishermen for gear loss or damage due to normal offshore oil construction or operation activities.

California Coastal Commission: The Coastal Commission reviews OCS plans of exploration and development and production plans for consistency with the California Coastal Management Plan. This review normally includes consideration of the adequacy of mitigations proposed to reduce impacts to fishermen. The Coastal Commission may condition a consistency finding on an applicant's agreeing to new mitigations. The MMS Pacific OCS Office's present policy, however, is not to honor such agreements pertaining to fisheries or other topics in subsequent MMS approvals.

NPDES Permits: The Federal Water Pollution Control Act of 1972 and the Clean Water Act of 1977 require that an operator proposing to discharge pollutants to water obtain a National Pollutant Discharge Elimination System (NPDES) permit, setting limits on type, quantity, and location of pollutants discharged. The Environmental Protection Agency and the Regional Water Quality Control Board (the latter by delegated authority) issue such permits.

California Department of Fish & Game: Fish and Game imposes various regulations on commercial fishing to protect the fisheries resource. Regulations include gear specifications, season closings, and open area restrictions. A Fish and Game office in Morro Bay provides assistance to local fishermen.

Marine Advisor: The University of California Sea Grant Marine Advisory Program provides current information and training to fishermen, and publishes a monthly oil and gas project newsletter for fishermen and offshore operators which presents information on proposed oil company developments and summaries of fishing activities.

Liaison Office: The California Coastal Operators' Group, representing offshore oil and gas developers and associated businesses, and the commercial fishing industry have jointly funded a Fisheries Liaison Office. This office distributes information on oil-related research and development projects, facilitates communication between the industries on such items as seismic testing and prime fishing seasons, aids fishermen in filing oil-related damage claims, and keeps records. The liaison office has also fostered cooperation between fishermen and crew and supply boat operators in establishing vessel traffic lanes.

San Luis Obispo County: The county's regulatory authority stems from discretionary authority and from the California Environmental Quality Act (CEQA). As a precondition of approving development, the county may impose conditions which protect and enhance portions

of its existing economy which would be impacted by physical effects on the environment. In addition to decision-making duties, the county may present fisheries concerns in lease sales, consistency determinations, and permitting actions taken by other agencies.

6.3 Impacts to Fisheries

Oil and gas activities in waters off the county, including seismic testing, exploration, drilling and production, and support vessel traffic, directly overlap fishing industry interests. The present need for energy must be balanced against preserving the fisheries resource, effective fish harvesting and marketing, and the significance of sport fishing to the local economy. Some impacts are easily identified, others are subject to more study and debate. The following summarizes major concerns.

Seismic Testing: Wherever it occurs, seismic testing reduces the viability of fisheries for a time. Noise impacts of testing render areas unfishable by driving fish away or by stunning them. Seismic boat movements may interfere with or damage fishing gear.

Preclusion: Short- or long-term presence of oil industry construction or supply vessels, platforms, pipelines and related equipment precludes offshore areas from commercial and sport fishing. Effects are not equally spread, due to different gear types, seasons, and locations. Oil industry exploration and development will occur gradually, but seismic testing and movement and placement of specific exploration, construction and production equipment will cause sudden, periodic disruption of fishing.

Offshore construction activities such as platform placement and assembly and pipeline and cable laying effectively preclude fishing in defined areas for months, in some cases for more than a year. The radius of exclusion around an existing platform may extend for one mile. An offshore pipeline construction flotilla may occupy a mile's width for part or all of an offshore construction corridor. Support vessel traffic may make vessel traffic lanes, if designated, especially unadvisable for fishing. The effective exclusion area for forms of fishing such as trawling, which depend on the ability of a boat to make long passes through productive grounds, may be much greater than the area formally excluded. Since trawlers tend to follow bottom contours, construction of north-south pipelines will generally impair trawling less than east-west pipelines.

Using onshore electrical power at any platform would require laying a power cable from shore. Cable laying may slightly extend any construction period, incrementally increasing preclusion of fishing. All types of nearshore construction will temporarily preclude surf fishing.

A platform's presence precludes fishing in its vicinity. The area of preclusion depends on the size of the platform and the type of fishery. During operations, pipelines to shore should not affect many types of commercial fishing. Nevertheless, if projecting objects are left on pipelines, if pipeline diameters are too large for trawls to cross (about 69 centimeters or 27 inches outside diameter, including coating and insulation), if large anchor scars or any debris

are left on the sea-bottom from construction, bottom-fishing gear may snag and fishing grounds may be temporarily or permanently lost. (See section 6.2 for discussion of funds which may provide compensation for gear loss.) A potentially beneficial impact is that platforms may be used for mariculture operations.

Discharge of Drill Muds and Cuttings: Drill muds, which are used to decrease the friction between the drilling bit and the earth formation, and cuttings, which are the portions of the earth drilled out by the bit, may be discharged during drilling operations. Muds and cuttings alter seafloor topography near platforms. To varying degrees, they may introduce toxins to the water column and seafloor. Cuttings normally settle quite close to platforms, while muds may be deposited over a radius of several kilometers around a platform. The deposits may interfere with trawl fishing by fouling gear or by altering the distribution of fish. These discharges may be made only upon issuance of an NPDES permit, and only in accordance with permit terms.

NPDES permits typically define the three dimensional boundaries of mixing zones in the water column. Within mixing zones, pollutants introduced in high concentrations are allowed to dissolve or be diluted. An applicant may discharge only in ways and quantities which result in pollutant concentrations below allowable limits at the edges of the zone. Permits specify allowable pollutant concentrations at the edges of mixing zones.

Certain drill mud and cutting discharges are known to affect eggs and larvae of pelagic (free-swimming) and benthic (bottom) species. Whether such discharges have direct toxic or other effects on organisms of commercial value is unresolved. Indirect effects could result from changes in water quality or impacts to bottom dwelling organisms which are passed on to commercial species through their food chain. Non-commercial species and water quality may also be directly affected. Also, the nature of the food web and the mobility of many species mean that any effects on eggs and larvae or benthic organisms may result in loss of prey species or bio-accumulation of toxins, thereby lessening fishing opportunities even in areas not subjected to direct oil industry presence.

Debris: Oil industry debris left on the seafloor is a continuing problem. Fishing nets and gear can snag debris and be destroyed or damaged. The results are gear loss, loss of catch, and loss of opportunity to fish during downtime. Also, lost gear may continue to kill fish. In federal waters, MMS OCS Order # One has reduced the problem by establishing an extensive inventory control and transfer procedure and prohibiting oil industry dumping. A State Lands Commission study is using a remote controlled vehicle to identify seafloor debris in certain areas of the Santa Barbara Channel.

Anchor Scars: In the course of constructing platforms and laying offshore pipe, vessels must change position, repeatedly raising and lowering anchors and sometimes pulling against anchors to provide slow, steady motion. The anchors employed are large; at best, they may leave indentations of several feet in soft substrates. This occurs most often in the fine silts and clays which characterize much of the seafloor off the county. When anchors are dragged in high sea

conditions or during exaggerated vessel movements, the indentations may be magnified. The indentations do not readily disappear; they may foul or hang up trawling gear for years.

Spills: Unpredictable events which may impact fisheries include spills of oil, diesel or other petroleum products. Major consequences of spills include fouling fish gear and vessels, precluding fishing in contaminated grounds, tainting otherwise saleable catch with oil and oil aromas, and damaging eggs and larvae. An oil slick could preclude surf fishing and prevent kelp cutters from functioning. A slick reaching Avila or Morro Bay might seriously affect existing mariculture operations. Slicks may foul gear for relatively short periods of time. Weathered oil floating in the water column or laying on the bottom can foul set nets, trawls, crab traps and similar gear for many months or even years. Oil sinking to the bottom can alter the benthic habitat and directly or indirectly expose organisms to hydrocarbons. The effects of such exposure may be subtle and long term. The direct toxic effect of spills on commercial species has been clearly demonstrated in spills which have reached bays. Conclusive demonstrations in open-water spills have not yet been made. The probability of a large spill occurring off the county will increase in proportion to the volume of oil produced offshore, amounts transported along the coast by tanker, amounts transferred at county marine terminals, and miles of pipeline laid.

Cumulative Impacts: Cumulative impacts on fisheries are important considerations at the lease sale stage as well as when specific developments are proposed. Preclusion of areas from fishing will increase as more platforms are installed and more large diameter pipelines are laid. Constructing two facilities near each other can preclude an area greater than either facility would preclude in isolation.

Offshore oil development and production activities are but one of several significant sources of oil pollution in the oceans. Offshore development increases the potential for chronic or massive pollution and toxin accumulation over that from tanker, industrial and municipal discharges.

Abandonment: An offshore energy project can normally be expected to be shut down and abandoned at the end of the project's economic life. Fishing industry interests can be promoted at this point if platforms, pipelines, and any ancillary equipment are disposed of in a way which ends any physical preclusion, thereby restoring fishing opportunity, and, where appropriate locations can be found, by depositing oil production structures on the sea bottom to create artificial reefs. The concentration of sea life at such reefs can be of special benefit to both commercial and sport fisheries.

6.4 Major Issues

Measures to reduce oil development impacts on fisheries include providing funds to compensate for loss of equipment, catch, and fishing opportunity, studies to address areas of uncertainty, coordination between the industries to promote awareness of activities and interests, and restrictions on activities at significant times or locations. Although not a mitigation measure,

rejection should also be a legitimate option if a project is found to pose unacceptable risks to fisheries.

Muds and Cuttings: Not all drill muds are equally harmful. The use of chrome-free lignosulfates, (non-toxic) for example, substantially reduces the potential for toxic effects. Non-toxic muds may not be usable in all drilling scenarios.

Alternatives exist to discharging drill muds and cuttings near platforms. Muds and cuttings can be disposed of onshore or could be discharged in areas not regularly fished, for example, off the edge of the continental shelf. Secondary impacts of alternatives would have to be evaluated and found acceptable in particular instances before any could be approved.

Anchor Scarring: In waters off the county, the period from May through October generally brings calmer weather, lower sea states and less potential for severe anchor scarring than does the period from November through April. Careful anchor settings and removals by anchor handling vessels reduces the occurrence of dragging and scarring. Accurate logging of anchor movements and post-construction bottom surveys can identify scarred and scar-free areas. Post-construction dragging of large bars across soft bottom substrate is a partial mitigation for anchor scarring.

Construction Practices: It is essential that the oil industry give effective notice to fishermen of impending construction, testing, or exploration which may affect fishing or gear. Any pipeline suspended in the water column during laying should be clearly marked by buoys. As soon as any line segment is in place, buoys should be removed to restore access for fishing gear.

Industry employees, contractors, subcontractors, and support vessel operators need to be clearly instructed that tossing debris or equipment overboard or handling anchors improperly violates terms of employment. An applicant should have a means, such as substantial penalty clauses in contracts, for enforcement against contractors and subcontractors.

Partial or complete pipeline burial by jetting or excavation is a possible means of lowering a pipeline profile high enough to impair trawling. Burial, however, increases the risk of rupture if a seismic event occurs. Post-construction surveys using means such as side scan sonar and bottom photography followed by debris removal and reduction of anchor scarring can restore an area's fishability. Phasing development may reduce impacts on trawling and drift gill netting by reducing vessel traffic and cumulative preclusions.

Fishing Enhancement and Compensation Programs: Because some impacts on commercial fishing, including destruction of habitat and preclusion from fishing grounds, do not lend themselves to direct mitigation, alternate strategies such as establishment of fisheries enhancement funds may be considered. Contributions to such a fund could be used in programs designed to offset project and cumulative impacts, including pier or harbor improvements,

contributions to a commercial fishing insurance pool, or commercial fishing research and development.

Offshore construction and deposit of debris on the seafloor during construction and operation may result in damage to and/or loss of fishing gear and lost fishing opportunity. If shown that their own activities have caused the damage in question, most offshore operators will directly compensate fishermen for loss. Fishermen sometimes lose gear and fishing opportunity in instances where clear responsibility of a particular operator cannot be established. If the loss occurs in OCS waters, the federal funds described above in the "Regulatory Setting" section may produce compensation, but the federal claim process involves considerable paperwork, a lengthy review (8 to 9 months is not uncommon), and applying for a claim does not guarantee payment. Further, there is no parallel to the federal claims process in state waters.

To alleviate such impacts, offshore developers can be required to contribute money to a local fishermen's contingency fund. A local contingency fund can establish a quick and effective way of aiding commercial fishermen who have suffered gear loss or damage apparently related to oil and gas exploration, development, or production. Such a fund can loan money on a valid application within a very small (e.g. 5) number of days. The loan must be repaid upon receipt of money from a federal or other fund. If the loss occurs in state waters, money provided by the local fund may amount to a payment instead of a loan.

Research: Various activities including drill mud and cutting discharges and oil spills affect eggs and larvae of pelagic and benthic species to an unknown extent. Studies of these effects on eggs and larvae have been conducted in other parts of the world. Work on these topics in this part of California is just beginning.

Opportunities for research to assist fishermen also exist. Examples include the need for marketing research, gear improvement, and alternate gear types.

Lease Sale Provisions: The lease sale process offers an opportunity to state concerns and seek solutions to impacts of offshore development on fisheries. Most or all of the concerns identified in this chapter, including exploration timing and criteria for locating equipment, may be raised. Exclusion of significant fisheries areas from leasing and other means of reducing impacts must be sought during these sales.

6.5 Policies

1. The county shall participate in commercial fishing issues, providing rapid assistance to fishermen and oil industry personnel in dealing with each other and with different layers of government. The county should administrate and coordinate programs and conditions and resolve issues within its permitting framework and advocate policies and positions in lease sales, decisions by other agencies, and in legislation.

2. Commercial fisheries resources off the county need to be more accurately delineated as to the economic value of different fisheries and times of year and locations where commercially harvestable species may be found. An evaluation of existing fisheries and creation of new fisheries should be considered.
3. Fisheries have a long-term economic value as a renewable resource. To protect this value, the county will adopt a position which requires:
 - Evaluation of the long-term value of fisheries as a renewable resource in assessing the needs of the fishing and oil industries, in addition to acknowledging annual catch and landing values.
 - Use of the lease sale EIS and stipulation process to articulate and advocate the full range of fisheries concerns. Any concerns which are not addressed through stipulations, should become criteria for evaluating applications which result from the lease sales.
 - The impacts of discharging toxic muds at sea be considered sufficient grounds for denial of any proposal. Wastes and cuttings shall not be disposed of in environmentally sensitive areas.
 - Disposal of muds and cuttings from any exploratory or development activities in an environmentally safe manner.
 - Protection of rich fishing areas such as the Santa Lucia Bank. These areas shall be identified and precluded from offshore energy activities.
 - Participating actively in all NPDES permit matters where authority to discharge pollutants to waters off the county is sought. Request that the least environmentally impacting options be implemented.
 - Provisions in any project approval which promote prevention, detection, containment and cleanup of spills or releases.
 - Evaluation of projects from the perspective of cumulative impacts as well as from the standpoint of (artificially) isolated project impacts.
 - Denial of any project which the county may find poses unacceptable risks to county fisheries.
 - Repair and/or restoration of anchor scarring caused by offshore oil and gas activities on soft bottom substrates be repaired and/or restored.

4. Insufficient knowledge exists as to the fisheries resource off the county's coast and as to the resource's susceptibility to damage from oil and gas development. To improve this knowledge and decision making, the county will adopt a position which requires:
 - Analysis of direct and indirect effects of seismic testing on fishing and on all life stages (especially eggs and larvae) of commercially and recreationally important organisms. Indirect effects shall include impacts to the food web.
 - Analysis of direct and indirect impacts of oil industry operations, including drill muds and cuttings, on the fisheries resource. Indirect effects should include effects on the food web.

5. Careful timing, location, design and configuration decisions for specific oil and gas exploration and development activities can lessen impacts on fisheries. To promote such decisions, the county will adopt a position which requires:
 - Stipulations or conditions which minimize or eliminate preclusions, obstructions, toxic discharges, and debris.
 - Minimizing potential interference with fisheries operations through careful evaluation of platform, pipeline and construction spread configurations, and other testing, construction, installation and operation activities.
 - Assurance that programs are implemented and maintained to mitigate the affects on fishermen for lost time/lost catch where projects and fishing seasons overlap. Consideration of the timing of testing, exploratory drilling, construction, and other temporary activities when affected regions are most intensely fished.
 - Stipulations that seismic testing not occur except after sixty days' notice to fishermen, and that such testing not be scheduled where it would conflict with significant fisheries and seasons.
 - That any pipeline exceeding 27 inches (including coating and insulation) in total diameter, be buried to lessen the likelihood of gear snagging on the pipeline.
 - Stipulations and conditions which eliminate depositing of debris and creation of anchor scars on the sea-bottom by operators, contractors, subcontractors, or vessel operators. In addition, insist that operators build enforcement powers into construction, service and supply contracts, and then use such powers, and provisions for post-construction bottom surveys and appropriate remedial actions.
 - An enforcement and compliance program related to fisheries conditions be implemented by an agency not directly involved with offshore oil and gas.

6. Policies and programs which reduce potential conflicts between commercial fishing and offshore oil and gas development, and which provide opportunities for fishermen and the oil industry to identify additional problems for consideration shall be enacted. To implement such policies, the county will adopt a position which requires:
- Rapid assistance to fishermen and oil industry personnel in dealing with each other and with different layers of government.
 - Administration and coordination of programs which provide for conflict resolution within the county's permitting framework.
 - The protection of fisheries resources using lease sale stipulations, legislation, and regulation.
 - Dissemination of information concerning oil industry exploration, development, and operation to the entire fishing community, permitting the fishing industry to be aware of and plan for oil industry activities.
 - Stipulations and/or mandated conditions which insure continuation of commercial fishing activity through prompt oil and gas industry or federal funding for gear loss, associated loss of catch, and loss of opportunity to fish in state and federal waters.
 - That stipulations and conditions require 1) recognition that preclusion of areas to fishing impairs the local economy, 2) contribution for enhancements such as ice houses, landing equipment, and development of alternate fisheries or fishery locations, and 3) identification of appropriate proposals for funding.

CHAPTER VII: AIR QUALITY

7.1 Description of Resource

San Luis Obispo County can be divided into three general air quality regions: the Coastal Plateau, the Upper Salinas River Valley and the East County Plain. Air quality in each of these regions is characteristically different, although the geographical features which divide them provide only limited barriers to transport of pollutants between regions. The coastal plateau will be the area most affected by air emissions from offshore energy development. This region of the county is five to ten miles wide and varies in elevation from sea level to about five-hundred feet. It is bounded on the northeast by the Santa Lucia Mountain Range, which rises abruptly to approximately three-thousand feet. Seventy-five percent of the county population and a corresponding portion of the commercial and industrial facilities are located within this coastal zone.

The air quality in a given location is described by the concentration of various pollutants in the atmosphere. The significance of a given pollutant level can be evaluated in several different ways: by comparing its atmospheric concentration to state and national air quality standards; by comparison to levels known to cause vegetation or property damage; or by analyzing historical data to determine how much deterioration has occurred or will occur over time.

The primary factors affecting air quality in a given area are the rate, type and location of pollutant emissions, the topographic and geographic features of the region, and the local and regional meteorological conditions. An emission rate represents the amount of pollutant released into the atmosphere by a given source over a specified time period; it is generally expressed in units such as pounds per hour (lb/hr) and tons per year (ton/yr). Local and regional meteorological conditions govern the transport and diffusion of emissions in the atmosphere. Wind speed, wind direction, atmospheric stability, temperature, and the presence or absence of inversions are some of the key parameters which affect pollutant dispersion.

Local and Regional Meteorology

The regional meteorology in coastal San Luis Obispo County is strongly influenced by the Pacific Ocean. This effect is reduced inland in proportion to distance from the coast or by major intervening terrain features, such as the coastal mountain ranges. Seasonal temperature extremes experienced inland are moderated near the coast due to the relatively constant temperature of the ocean. A broad cell of high pressure commonly resides over the ocean, centered several hundred miles offshore. Seasonal variations in the position and strength of this cell cause seasonal changes in the weather patterns of the area.

Temperature differences between air masses over land and water drive both the strong, prevailing northwest (onshore) daytime winds and the weak, nighttime drainage winds

(offshore) on the coastal plateau. The presence of the Pacific high pressure system to the west tends to enhance afternoon and evening onshore winds. However, these conditions of strong northwesterly flow are generally not those associated with maximum air pollution impact from present or future offshore and coastal emission sources.

Maximum impact conditions generally occur when the Pacific high pressure cell has weakened or moves inland to the east; this can produce a "Santa Ana" condition which transports air (usually pollutant-laden) from the southeast. The breakup of a Santa Ana condition often leads to relatively stagnant air and a buildup of pollutants, which can be transported over the ocean during the nighttime land breeze. The occurrence of the typical daytime sea breeze can bring these pollutants back onshore, where they combine with local emissions to cause high pollutant levels. This situation is probably the most important for producing high ozone concentrations in San Luis Obispo County.

Air Quality in San Luis Obispo County

San Luis Obispo County is currently designated as attainment or unclassified for all pollutants regulated under the national air quality standards. This essentially means that air quality within the county meets the requirements of the federal Clean Air Act. However, San Luis Obispo County has been designated a nonattainment area for the state air quality standards for ozone and PM10. As shown in Table 7-1, violations of the state standards for ozone and PM10 (fine particulate matter 10 microns or less in diameter) are recorded several times each year at various monitoring locations in the county; ozone concentrations exceeding the federal standard are also occasionally measured (see Table 7-3 for listing of applicable standards). In addition, sulfur dioxide (SO₂) levels on the Nipomo Mesa have violated the state SO₂ standards in the past.

Ambient measurements of pollutants such as SO₂, carbon monoxide (CO), and particulate matter (PM), are primarily influenced by nearby sources of emissions. Thus, concentrations of these pollutants are usually localized and can vary considerably between monitoring stations. On a regional basis, ozone is the pollutant of greatest concern in the county, particularly within the coastal plateau. Ozone is a secondary pollutant, formed in the atmosphere by complex photochemical reactions involving precursor pollutants and sunlight. The amount of ozone formed is dependent upon both the ambient concentration of chemical precursors and the intensity and duration of sunlight. Consequently, ambient ozone levels tend to vary seasonally with the weather.

Nitrogen oxides (NO_x) and reactive organic gases (ROG) (also called reactive hydrocarbons, RHC, or volatile organic compounds, VOC) are the primary precursors to ozone formation. NO_x emissions result primarily from the combustion of fossil fuels; ROG emissions occur through combustion processes and through evaporation of petroleum and solvent-based products. NO_x and ROG constitute a major portion of the emissions resulting from offshore energy development and from stationary and mobile sources onshore. Table 7-2 presents the 1987 emissions inventory for San Luis Obispo County; Figure 7-1 graphically depicts the

proportional distribution of ROG and NOx emissions among the major source categories in this county.

Table VII-1
Maximum Pollutant Concentrations Measured
in San Luis Obispo County from 1982-1989

Table VII-2
1987 Annual Emissions Inventory - San Luis Obispo County
(Tons per Year)

Table VII-2 (continued)

Figure VII-1
1987 Annual Emissions Inventory - San Luis Obispo County

Further information regarding existing emissions and air quality in the county can be found in the 1991 Clean Air Plan for San Luis Obispo County.

7.2 Regulatory Setting

Offshore energy development and associated onshore activities are subject to air quality regulations and standards that have been promulgated by federal, state, and county regulatory agencies. Jurisdictional authority tends to overlap among the various permitting agencies due to the regional scope of potential impacts and the relationship between interconnected project facilities located both onshore and offshore. Coordination between the various regulatory agencies is thus essential to the permitting process.

Federal Clean Air Act Amendments

Prior to 1977, the federal Clean Air Act required that all areas of the country attain the National Ambient Air Quality Standards by 1975; this deadline was later extended to 1977. The 1977 Amendments to the Act further delayed the attainment deadlines to 1982, with an additional extension for ozone and carbon monoxide to 1987.

The Amendments also established local air quality planning processes, requiring separate plans for each local area that had not attained the standards. These plans, called nonattainment plans, were to be prepared by local agencies designated by the governor of each state and incorporated into a State Implementation Plan (SIP). The federal Environmental Protection Agency (EPA) was given power to impose sanctions for failure to submit a plan or carry out commitments in a plan. Sanctions could be a ban on construction of major new facilities and the withholding of federal highway, sewage treatment, and air planning funds.

Numerous areas throughout the United States failed to meet the December 1987 deadline for attainment of the federal ozone and carbon monoxide standards. As a result, on November 15, 1990, new federal Clean Air Act Amendments (CAA) were signed into law by President Bush. These amendments represent the fifth major effort by the U.S. Congress to improve air quality. The new CAA is generally less stringent than the California Clean Air Act. However, unlike the California law, the CAA sets statutory deadlines for attaining federal standards.

San Luis Obispo County has been designated as attainment or unclassified for the federal air quality standards and is not mandated to develop a federal nonattainment plan. However, rules and regulations adopted by the District are submitted to the California Air Resources Board (ARB) for inclusion in the SIP.

Several new sections have been added to the CAA, including requirements for the control of toxic air contaminants; reductions in pollutants responsible for acid deposition; development of a national strategy for stratospheric ozone and global climate protection; and requirements for a national permitting system for major sources. A significant change in federal agency jurisdiction also occurs. The new CAA transfers authority for regulation of air quality on the

Outer Continental Shelf from the Minerals Management Service to the EPA. The law allows local APCDs to apply to EPA for delegation of that authority. EPA regulations regarding offshore energy development are described under a separate heading in this section.

California Clean Air Act

The California Clean Air Act (CCAA), signed into law in September of 1988, requires all areas of the state to achieve and maintain the California ambient air quality standards by the earliest practicable date. These standards are generally more stringent than the federal standards; for example, the state ozone standard is 0.09 ppm compared to the 0.12 ppm federal ozone standard. Thus, emission controls to comply with the state law are more stringent than necessary for attainment of the federal standard. State and federal standards for ozone and other pollutants are presented in Table 7-3.

San Luis Obispo County has been designated a nonattainment area for the state air quality standards for ozone and PM10. Nonattainment designations are further categorized into 3 levels of severity: "moderate" (can demonstrate attainment by 1994); "serious" (can demonstrate attainment by 1997); and "severe" (cannot demonstrate attainment until sometime after 1997). This county is considered a "serious" ozone nonattainment area and must implement an attainment plan with sufficient control strategies to achieve at least a 5% per year reduction in ROG and NOx emissions countywide, using 1987 emissions as the baseline level.

The 1991 Clean Air Plan for San Luis Obispo County, adopted by the San Luis Obispo County Air Pollution Control Board on January 21, 1992, is designed to meet these requirements.

Environmental Protection Agency Regulations

The 1990 Amendments to the federal Clean Air Act added section 328 to the Act, which transfers air quality regulatory authority on the OCS to the EPA. Congress further specified that EPA's initial rulemaking must require OCS sources within 25 miles of states' seaward boundaries to comply with the same requirements that would be applicable if the OCS source were located in the Corresponding Onshore Area (COA). This shall include, but not be limited to, state and local requirements for emission controls, emission limitations, offsets, permitting, monitoring, testing and reporting. New OCS sources must comply with such requirements on the date of promulgation; existing OCS sources must comply 24 months after the rules are promulgated.

Each state adjacent to an OCS source may promulgate and submit to the Administrator its own regulations for implementing and enforcing the Section 328 requirements. The EPA may delegate implementation and enforcement authority to state or local agencies if their regulations are adequate to meet the requirements of the Act. If the EPA finds that compliance with a specific pollution control technology requirement is "technically infeasible or will cause an unreasonable threat to health and safety", the OCS source may be exempted from the

Table VII-3
Ambient Air Quality Standards

requirement. Written findings must document the basis for the exemption, and the EPA must impose "another requirement equal to or as close in stringency to the original requirement as possible."

EPA regulations implementing this section of the Clean Air Act are currently under development.

County Air Pollution Control District (APCD) Regulations

The San Luis Obispo County APCD has primary responsibility for assuring that the state and national air quality standards are achieved and maintained within the jurisdictional boundaries of the District. State law delegates regulatory authority to the APCD over all non-vehicular sources of air pollution within the District. The County Board of Supervisors acts as the District Air Pollution Control Board in all decision-making concerning the policies, rules and regulations of the APCD.

The District rules and regulations limit the emissions of specific contaminants and require permits specifying equipment and operating procedures for all emission sources subject to the rules. New and modified stationary sources must comply with the District's New Source Review (NSR) rule. This rule identifies the control requirements for new or modified emission sources and the thresholds of applicability for sources subject to the rule.

Regulation II, which contains the NSR rule, was revised and adopted by the District Board on November 5, 1991 to meet the no net increase provisions of the California Clean Air Act. Best Available Control Technology (BACT) is required for new, modified, or relocated equipment that emit criteria pollutants or their precursors. All new or modified sources of NO_x, ROG, PM₁₀, and SO_x which result in an increase in emissions are also required to offset those emissions through the use of Emission Reduction Credits or Community Bank Credits. There are no exemptions from the mitigation requirements. Either the District or the applicant must provide offsets for all emission increases.

The District's NSR rule has been included in the proposed EPA air quality regulation for OCS sources. It is expected that the District will be delegated authority to enforce the rule on future OCS development activities offshore San Luis Obispo County.

Department of the Interior (DOI) Regulations

The 1990 Clean Air Act Amendments transferred air quality regulatory authority on the OCS from DOI to EPA. However, previous lease-sales offshore California have contained stipulations requiring the DOI Administrator to impose specific air quality requirements for development of tracts within the sale area; these stipulations are still in effect. Of particular interest is the stipulation for lease sale 73 tracts. Any LS 73 tract within ten miles of shore must, if technically feasible, minimize emissions of NO_x by using electric power supplied from shore rather than generating their own power at the platform; four of the 5 existing LS 73 tracts

fit this category. Three of these leases are less than 10 miles offshore Point Sal, while the other 2 are located west of Point Arguello. It is unclear at this time whether the lease sale stipulations or the OCS air quality regulations will prevail in the event of a regulatory conflict during development of one of these tracts.

The Minerals Management Service (MMS) is also responsible for implementing the National Environmental Policy Act (NEPA), which requires the evaluation and mitigation of any project under federal jurisdiction that may have a significant effect on the environment. This typically requires the preparation of an Environmental Impact Statement (EIS) to identify potential significant impacts and appropriate mitigations. The EIS is often prepared in conjunction with the state-mandated Environmental Impact Report, described below.

California Environmental Quality Act (CEQA)

Offshore energy development and associated onshore activities generally involve large emission sources with the potential to cause significant air quality impacts. A significant air quality impact is typically defined as the potential to cause or contribute to a violation of any state or federal ambient air quality standard; the potential to interfere with the attainment and maintenance of those standards; or the potential to cause significant deterioration of the existing air quality. CEQA establishes a duty for public agencies to avoid or minimize environmental damage where feasible in regulating public or private activities.

The Act requires the preparation of an Environmental Impact Report (EIR) for any project under state or local jurisdiction which may have a significant effect on the environment. This is usually triggered by an application to construct a project requiring an approved land use permit. The EIR must identify and describe the direct and indirect significant impacts of all parts of a project, and any mitigation measures or project alternatives which could minimize those impacts. The EIR must also evaluate the potential for a project to contribute to significant cumulative impacts when analyzed in conjunction with impacts due to related past, present and foreseeable future projects. The County then uses this information in its decision to approve, modify or deny a land use permit. CEQA requires that public agencies not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects.

California Coastal Commission Consistency Certification

The California Coastal Commission has the authority to review Exploration Plans and Development and Production Plans (DPP) in federal waters for consistency with the California Coastal Management Program (CCMP) under the Coastal Zone Management Act. Coastal Act policies are enforceable policies of the CCMP which require that new development be consistent with the requirements imposed by an Air Pollution Control District or the California Air Resources Board.

Additionally, the CCMP requires that adverse impacts, including air impacts, be mitigated to the maximum extent feasible. All air quality impacts from offshore energy development, including those from associated onshore facilities to be constructed, increased use of existing facilities, and impacts from all marine vessels, must be considered in the determination of consistency with the CCMP. The Coastal Commission has permit jurisdiction, in addition to that of the counties and the APCD's, over projects within state waters and in certain other areas of the Coastal Zone. These developments are subject to the requirements and standards of the Coastal Act, including the requirement that adverse impacts be mitigated to the maximum extent feasible.

To be found consistent with the California Coastal Management Program (CCMP), the air pollution emissions from a project must meet all applicable standards and conform to federal, state and local air quality regulations. In addition, Section 307(f) of the Coastal Zone Management Act specifically requires that the provisions of the federal Clean Air Act (CAA), and state standards adopted to implement the CAA, be incorporated into state coastal programs. A proposed activity cannot be found consistent with the CCMP if it would individually, or in combination with other existing or proposed activities, result in violations of these provisions or otherwise impede the State's ability to meet the requirements of the Clean Air Act. Any consistency determination by the CCC can be appealed to the Secretary of Commerce, however, with whom rests final authority on the decision.

Jurisdiction and Interagency Coordination

The development of offshore energy resources is a complex process requiring substantial support facilities both offshore and onshore. Production platforms, marine supply vessels, helicopter transport, marine tankers and terminals, oil and gas pipelines and onshore processing facilities are some of the common components of offshore development projects. The diversity and scope of such projects results in lengthy and complicated regulatory review involving many agencies and overlapping jurisdictions. Interagency coordination and cooperation is essential to the review process. In particular, consultation and coordination between the MMS, the EPA and local Districts, and the United States Coast Guard is necessary to ensure that air quality requirements do not result in unsafe or hazardous operating conditions for regulated vessels and stationary offshore facilities.

7.3 Air Quality Impacts

The effects of air pollution on health and public welfare has been the subject of intense study and concern over the past four decades. The following discussion presents a brief summary of the adverse impacts from the individual pollutants of concern associated with offshore energy development. For ease of reference, a list of the applicable state and federal health standards is provided as Table A-1 in Appendix A.

Ozone

Ozone is a secondary pollutant, formed in the atmosphere by complex photochemical reactions involving precursor pollutants and sunlight. It has a pungent odor and indiscriminately oxidizes a broad spectrum of substances, ranging from rubber and fabrics to vegetation and sensitive human respiratory tissues. Breathing impairment is the primary and most noticeable health effect of ozone exposure. Symptoms of sore throat, chest pain, coughing and headaches can occur in healthy individuals at ozone levels of 0.20 to 0.30 ppm. Children, the elderly, and those with diminished respiratory function (asthmatics and those with chronic bronchitis or emphysema) are known to be affected at much lower levels and can suffer severe health problems from prolonged or acute exposure to ozone. A variety of other health effects have also been found, including cell and chromosome damage and increased susceptibility to disease.

Ozone is also the most serious pollutant threat to California agriculture and native vegetation due to its pervasive nature. Many sensitive plant species are known to suffer damage at concentrations below the state and federal health standards. Ozone attacks leaves, causing them to yellow, develop dead areas and drop early. Continued exposure of plants to low levels of ozone can reduce growth and yield and increase susceptibility to disease and insect attack. The pine forests above Los Angeles in particular have suffered severe damage. Trees and other plant life in the Sierra Nevadas statewide are also increasingly impacted by ozone formed in the inland valleys. Crop damage from ozone exposure is also extensive and has caused changes in land use in several areas in California, with formerly productive orchards and fields no longer suitable for agriculture. Many of the major crops grown within this county are particularly sensitive to ozone injury, including orchard crops, lettuce and several grape varieties. The California Air Resources Board (ARB) estimates statewide agricultural losses due to ozone damage from all sources at over \$500 million annually. A portion of those losses could be incurred by crop growers within this county.

The effects of ozone on public health, vegetation and materials in San Luis Obispo County are not well documented. We do, however, approach and exceed ambient ozone standards more frequently than for any other pollutant, and our terrain and meteorology are conducive to future deterioration in ozone air quality. Thus ozone remains the pollutant of greatest concern countywide.

Sulfur Dioxide

Sulfur dioxide (SO₂) is a colorless, corrosive gas with an acrid odor. It occurs in the atmosphere chiefly as a by-product of sulfur-containing fossil fuel combustion. The health and physical effects of SO₂ relate directly to its propensity to form sulfuric acid in the presence of moisture. Its primary health effect is on the upper respiratory tract, where the inhaled gas is rapidly adsorbed and converted to acid, causing inflammation of sensitive mucous linings. Adsorbed on fine particulate matter, or oxidized to suspended sulfate, SO₂ can also cause enduring damage deep in the lungs.

Impacts to vegetation from sulfur dioxide are well known and can occur at levels below the health standards. Damage to the outer surfaces of plant leaves occurs from adsorption of wet SO₂ gas or dry sulfate particle deposition. Gaseous SO₂ absorbed through leaf stomata causes injury to internal leaf tissues. Short-term, high-concentration exposures create dead spots on leaves and reduce photosynthesis. Long-term exposure to low levels of SO₂ can reduce root and stem weight, decrease protein and carbohydrate content and ultimately result in plant death.

Sulfur dioxide has similarly pronounced corrosive effects on a wide spectrum of materials including metals, stone, fabrics and leather, and is a primary contributor to the global acid precipitation problem.

Oxides of Nitrogen

Oxides of nitrogen are produced by a variety of natural and man-made processes but, like SO₂, they primarily result from the combustion of fossil fuels. The principal gaseous oxides of nitrogen in the atmosphere are nitric oxide (NO) and nitrogen dioxide (NO₂). Of these, only NO₂ has significant health effects at ambient concentrations. Like sulfur dioxide, these effects stem from its ability to oxidize other compounds. Moist respiratory tissues are inflamed both by single, short-term exposure to dilute NO₂ and by repeated exposure to even lower concentrations. Chronic exposure to NO₂ concentrations between 0.08 and 0.15 ppm has been associated with increased incidence of respiratory illness.

Low levels of NO₂ can cause a decline in the growth and yield of sensitive crop plants and other vegetation, while acute doses may result in direct foliar injury. When NO₂ and SO₂ occur together they may act synergistically to inflict more plant damage than would occur from the additive effects of each pollutant individually.

Oxides of nitrogen are a significant contributor to acid precipitation nationwide and are its primary precursor in California. NO₂ is also a major culprit in visibility degradation, imparting a reddish-brown color to plumes and to widely dispersed, hazy air masses.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas produced by the incomplete combustion of fossil fuels. This pollutant tightly binds to blood hemoglobin, reducing the amount of oxygen which reaches the heart, brain, and other body tissues. Exposure to CO particularly endangers people with coronary artery disease. Even healthy individuals can experience headaches, fatigue and slow reflexes at relatively low concentrations. Carbon monoxide impacts to vegetation have been shown only at concentrations substantially above those known to cause health effects.

Particulate Matter

Airborne particulate matter (PM) includes dust and smoke and may contain sulfur, nitrogen, carbon and various metals. Inhaled particles can directly irritate the respiratory tract, constrict airways and interfere with the mucous lining of the airways. Although the nose and throat are able to stop most large particles, very small ones may penetrate deep into the lungs. Particulate matter may also be a carrier for toxic materials, allowing them to enter the lungs where they can be absorbed into the blood and circulated to other parts of the body.

Heavy particulate deposition on vegetation can reduce photosynthesis and clog stomata, preventing the free exchange of gases between a plant and the surrounding air. In contrast, absorption of small particles into the stomata can keep them from closing and thus allow excessive water loss and increased penetration of gaseous pollutants into the leaf.

Hydrogen Sulfide

Hydrogen sulfide (H₂S) is a colorless gas with an offensive odor suggesting rotten eggs. It is used in a variety of chemical manufacturing and agricultural applications and occurs as a by-product in many industrial processes. It is a common component of natural gas and is frequently encountered during drilling and production of oil and gas wells.

Hydrogen sulfide odors are extremely pungent and are detectable at very low concentrations (1 part per billion). At sufficiently high concentrations H₂S is very toxic to humans. It is usually absorbed through the respiratory tract and carried by the blood stream to various body organs. H₂S generally acts as a cell and enzyme poison, and its presence in the blood can lead to blocking of oxygen transfer, especially at high concentrations. Ambient levels above 500 ppm can cause paralysis of the respiratory center, which can lead quickly to unconsciousness and death. At lower levels (20 - 350 ppm) hydrogen sulfide may cause conjunctivitis, respiratory tract irritation, damage to the heart muscle, nerve paralysis and several other disorders. Common symptoms of exposure include metallic taste, fatigue, diarrhea, blurred vision and intense aching of the eyes.

Hydrogen sulfide impacts to vegetation and various man-made materials are similar to those caused by sulfur dioxide, which were discussed previously.

7.4 Offshore Emissions and Mitigation Measures

Development of offshore energy resources is a lengthy process which can be grouped into three major phases: exploration, development and production. Although the activities and operations which characterize each phase are distinctly different, timing of phases may overlap, particularly during development and production. For instance, if a large number of wells are planned for a given platform the development phase may involve a 4 year drilling program; production activities, however, usually begin upon completion of the first well. Thus, the highest emissions are typically generated during the first few years of a project, when development and production activities are occurring simultaneously.

The following discussion describes the major emission sources associated with each phase and the mitigation strategies available to reduce their impact. Support vessel activities are a major emission source common to all phases and are discussed separately in Section 7.4.4.

7.4.1 Exploration

Once the potential for oil and/or gas has been established in an area and the tracts are leased, exploratory drilling is undertaken to determine if sufficient resources exist to merit a development effort. The number of wells drilled depends, to some degree, upon the expected level of resources and their geographical extent. Each well typically requires 40 to 60 days to drill and abandon. If hydrocarbons are found, an additional 30 days may be needed to test the well.

Emissions: Offshore exploratory drilling is performed using large mobile drilling platforms or vessels. Personnel and supplies are transported to and from the drill sites by helicopters, crew boats and supply boats. The large diesel engines used to power the drilling units, and the support vessels which service the units, are the main sources of air emissions. Emissions may also occur as a result of natural gas flaring if well testing is conducted. The pollutants emitted primarily consist of NO_x, with smaller amounts of ROG, CO, SO₂ and particulate matter. On a short-term basis (hourly or daily) NO_x emissions can be substantial; typical estimates may exceed 100 lbs/hr for each well. Annual NO_x emissions can also be significant if a large number of wells are drilled. On average, 2 to 5 wells are drilled during the exploration period, generating 175 to 250 tons of NO_x.

Mitigations: A typical drilling unit has between three and six large diesel engines used as "prime movers" to generate electricity. These diesel-electric generators drive the locomotive, positioning, pumping, compressing and drilling equipment on the unit. The amount of emissions per engine and the effectiveness of available control measures is very dependent on the type of engine and the operating conditions. For direct injection diesels, retarding the injection timing by 4° can reduce NO_x by 15-20 percent. Exhaust gas recirculation may also be effective on engines operated at less than 50% load.

In contrast, indirect injection diesels (such as the Caterpillar D-399 engines) are available which employ staged combustion and prechamber mixing techniques. These engines generate less than one-fourth of the NO_x emissions from any other engine commonly used on exploratory drilling vessels. Use of these engines on the drilling units is currently the most effective emission control measure available.

Upon completion of an exploratory well it may be flow-tested for up to 48 hours, resulting in the flaring of natural gas. The amount of emissions produced depend on the length of the test and the chemical properties of the gas. Hydrogen sulfide content is the largest variable and determines the amount of sulfur dioxide produced during flaring. Placing limits on the duration of testing is the most effective control measure available. Restrictions on well testing, however, may make it difficult to acquire certain production information necessary for future

development of the resource. The applicability of this control measure should thus be evaluated on a case-by- case basis.

To mitigate the impact of these emissions, stipulations may be placed on the timing and duration of the drilling period so as not to coincide with the peak ozone season, typically defined as the period between June and November. Care must be taken however, to avoid conflict with other timing restrictions designed to protect sensitive biological resources.

7.4.2 Development

Development occurs after exploration confirms the presence of sufficient quantities of oil and/or gas to justify production. The major activities during this phase include platform installation, pipeline installation and drilling. The number of production wells drilled, the type and number of platforms installed, and the miles of pipeline laid depend upon the amount of recoverable resources in a zone and, to some extent, on the transportation and processing plans for the produced oil and/or gas. In addition, a variety of technical factors also play a large part in determining the ultimate configuration of the development and production effort. These include the gravity of the oil, porosity and permeability of the formation, water depth and distance from shore, fracture extent of the reservoir and other variables.

Platform Installation

For platform installation, the jacket and deck modules are fabricated onshore (at a specialized manufacturing facility outside the county) and towed to the offshore site. Once offshore, the jacket is sunk by one or more derrick barges and secured to the sea floor by pilings driven through the jacket legs. The platform decks are then lifted onto the jacket and secured in place. A heavy transport vessel (HTV) and several tug boats are required to maneuver the derrick and material barges used to lift and secure the platform components. Once the decks are complete and major pieces of equipment have been installed, the generators and cranes on the platform can supply power and move the remaining pieces of equipment into place. Thus, the tugs and derrick barge are not required during the later stages of installation. Platform installation and hookup generally takes 3 to 6 months to complete.

Emissions: The equipment on the barges, and the vessels used to maneuver them, are the major emission sources associated with this activity. Emissions primarily consist of NO_x, with considerably smaller amounts of CO, ROG, SO₂ and PM. Large diesel engines are used to power the major pieces of equipment on the derrick barge while small diesels are used for the welding machines, compressors and other miscellaneous equipment. Large diesel prime-movers are also used to power the HTV and the 7 to 10 tugs used in the installation. In addition, the use of support vessels to transport crew and supplies can be particularly intense during this period. Total NO_x emissions range from 190 to 240 tons during installation, depending on the size and layout of the platform.

Mitigations: The diesel-electric generators on the derrick barge are similar to those found on exploratory drill rigs and are subject to the same emission control strategies. Similarly, diesel engines on the light-duty tugboats are similar to those used on the support vessels (see section 7.4.4 for applicable control measures). Use of low-sulfur diesel fuels can substantially reduce the SO₂ emissions from these sources. Activity management techniques can provide additional impact mitigation by reducing the simultaneous occurrence of large polluting activities where possible (e.g. - scheduling crew and supply vessel trips so that both vessels are not at the platform at once). Such techniques reduce the frequency and impact of peak pollutant concentrations by spreading the emissions over time.

Pipeline Installation

There are at least two different methods for constructing submerged pipelines: the single-pipe, lay-barge method and the multiple-pipe, pull barge (bottom pull) method. The choice of method depends on factors such as the length and diameter of the pipe, water depth, and sea bottom conditions. The lay barge technique is most commonly used and involves heavy-duty machinery for welding and moving pipe, tugboats to assist in movement of the barge, supply boats to deliver pipe and crew boats to transport workers. The time period involved in pipeline construction depends on the number of pipelines required and the distance from platform to landfall; a 6-month construction period is often assumed for impact analyses.

Emissions: As with platform installation, the major emission sources are the handling tugs, support vessels and equipment operations on the lay barge, with NO_x being the primary pollutant. The diesel-electric generator on the lay barge produces the majority of the emissions from this activity. The total emissions generated are directly related to the length and number of pipelines. Emission estimates typically range between 5 and 15 tons of NO_x per mile of pipeline installed. On an hourly basis NO_x emissions can be substantial and represent a significant potential for short-term air quality impacts onshore.

Mitigations: The mitigation measures applicable to platform installation apply also to offshore pipeline installation.

Development Drilling

Platform operations essentially begin with the start of development drilling, at which time the platform is fully functional with all operating systems in place. The development drilling phase lasts from the start of drilling on the first production well until all planned wells have been completed. The drilling is done using 1 to 2 large drill rigs mounted on the platform; the number of wells drilled depends on the amount and types of recoverable resources expected. Power for drilling is provided either by diesel engines, turbine generators (natural gas or diesel-fired), or subsea electric cable. Production is also occurring from the time the first well is flowing oil and/or gas; thus, production related activities and emissions also occur throughout most of the development drilling phase.

Emissions: With a few exceptions, the emission sources associated with both development drilling and production operations are the same (unless self-powered drill rigs are used). Compared to production, however, development drilling places additional power demands for the operation of the drill rigs, increases crane use, requires substantially more support vessel activity, and requires intermittent operation of some additional equipment such as cement pumps and logging units. Platform emissions generally reach a peak near the end of the development drilling period when production is high and drilling activities are still occurring. The major emission sources during this period are the turbines (if present); the stand-alone diesel engines which power the cranes, cement pumps, logging unit and various types of emergency and standby equipment; support vessel operations; fugitive hydrocarbons from leaks in valves, seals, compressors and other petroleum handling and storage equipment; and natural gas flaring or venting. NO_x is emitted in the highest quantity, followed by ROG, CO, SO₂ and PM. Peak annual NO_x emissions can range from 100 to 500 tons/year, or higher, with power production and support vessel activities being the largest variables. Hourly emissions can also be substantial due to the amount of large equipment operating simultaneously under high load conditions during this time period. Thus, this stage of the development/production cycle has the highest potential for causing or contributing to elevated ozone levels onshore.

Mitigations: Emission control strategies for sources also associated with production operations, including generation of power and process heat, fugitive emissions, routine flaring and various other sources are outlined in the next section. Emissions from self-powered drill rigs can be reduced by about 25% through a combination of injection timing retard and air-to-fuel ratio adjustment on the large diesels. Substitution of electric motors powered by gas-fired turbines or subsea cable, however, will provide a much greater reduction. Emissions from the industrial diesels typically used to power the cranes, cement pump and logging unit can be substantially reduced by replacing them with California-certified automotive diesels. Direct emission control of emergency and standby equipment is generally not cost-effective due to their low frequency of use. However, the timing and duration of intermittent activities, such as testing and maintenance, can be restricted to ensure they don't occur simultaneously with other significant emission generating activities.

7.4.3 Production

The production phase occurs over a much longer period than either the exploration or development phases. Depending on the extent of the resource, production may continue for 20 to 30 years. For purposes of this discussion, production activities have been separated into platform operations and transportation of the resource.

Platform Operations

Once all planned production wells have been drilled many of the major emission generating activities at the platform decrease substantially. Much of the drilling equipment is removed from the platform, support vessel and associated platform activities are reduced, and overall power demand declines to a relatively stable lower level.

Emissions: As noted in the previous discussion, the potentially significant emission generating activities during the production phase include power and process heat production, fugitive hydrocarbons, routine flaring, various intermittent sources such as cranes and emergency or standby equipment, and support vessel operations.

The demand for power on a production platform usually involves a relatively stable base-load and a fluctuating, variable-demand load. Base-load power is used for lighting, machine shops, instrumentation, control systems and other basic utility functions. The variable-demand load consists of the power requirements of the mechanical equipment needed during production, such as pumps and compressors for oil and gas sendout, submersible pumps, and gas lift. This load fluctuates with the number and type of active wells and the level of production, but typically exceeds the base load demand.

Power for offshore platforms is usually supplied by onboard turbine generators or submarine electric cables from shore. Onboard turbines are major emission sources and often account for over 80% of all NO_x emissions from a platform. They typically burn diesel fuel during the first six months of drilling until gas production (if available) is established. If cable electric power from shore is used, the turbine emissions at the platform can be eliminated (see pages 28-30 for a detailed discussion of platform electrification issues).

Heating of produced crude for initial water separation or to maintain critical flow characteristics can be accomplished through natural gas fired heaters, electric heaters, or turbine waste-heat recovery. Electric heaters themselves do not generate emissions. Similarly, turbine waste-heat recovery does not cause any additional emissions if the turbines are already being used for power on the platform. Gas heaters produce low levels of NO_x and ROG through the combustion process.

Evaporative losses, or fugitive emissions, result from leaks in valves, seals, compressors, and other petroleum handling and storage equipment. Fugitive emissions are primarily hydrocarbons, but can also include impurities in the product such as hydrogen sulfide (H₂S). The average reactive fraction of fugitive hydrocarbon emissions is about 34 percent. The total evaporative losses from a given platform depends on the number of components with the potential to leak hydrocarbons, the production throughput, and the effectiveness of the maintenance program undertaken by the operator.

Emissions associated with venting and flaring of natural gas depend primarily on the frequency and duration of their occurrence and on the composition of the raw gas. Though not a part of what would be termed "normal operations", short-term flaring events occur rather routinely in the course of producing natural gas and crude oil on an offshore platform. Flaring may occur when an unexpected high pressure pocket of natural gas is encountered during drilling; during process upsets such as compressor failures; or during maintenance and repair of equipment, instrumentation, and controls. MMS estimates an average of three 10-minute flaring events occur each day on a typical OCS platform. Flaring emissions consist primarily of NO_x,

although SO₂ emissions can also be substantial depending on whether the flared gas is sour (high in H₂S) or sweet (low H₂S content).

Emissions also result from the small diesel engines used on various types of intermittently operated equipment, including emergency generators, firewater pumps and cranes. The annual emissions contribution from these sources is small; however, short-term (hourly) NO_x emissions can be significant, particularly if operations occur simultaneously with other emission generating activities.

Mitigations: Gas turbines, for power generation or cogeneration, are the major source of NO_x on a platform. Water or steam injection is a standard control technology on offshore turbines and can reduce uncontrolled NO_x emissions by 50 to 70 percent. Selective catalytic reduction (SCR) has shown up to 90% NO_x control for onshore turbines but poses currently unresolved safety issues for offshore application. Recent experimental efforts using premixed combustors and catalytic combustors on gas turbines also offer considerable promise for significant NO_x reductions. As is the case with other emerging techniques, the duty cycles of offshore equipment pose a particular challenge to these technologies. Provision of power through subsea cable remains the single most effective method for reducing emissions of all pollutants at the platform. A more detailed discussion of this measure is presented in section 7.6.

Uncontrolled evaporative and fugitive emissions can be reduced more than 50% through an effective inspection and maintenance program for valves, pumps, compressors and pressure relief valves. Further reductions can be achieved through the use of more efficient process components (e.g.- metal bellows valves, packless valves, dual mechanical and tandem seals, etc.) and an effective vapor recovery system. Thorough consideration of component efficiency at the design stage will minimize the overall level of fugitive emissions from the process.

Flaring emissions can be reduced through the use of smokeless flares and by implementing an inspection and maintenance program to increase their combustion efficiency. SO₂ emissions from sour gas can be controlled, if necessary, by routing the gas through a caustic pollutant scrubber prior to flaring.

Emissions from the diesel engines used to power intermittently operated equipment, such as the cranes and firewater pump, can be reduced by the use of California-certified automotive diesels. Alternatively, crane emissions can be further reduced using electric motors powered by subsea cable, if available; large electric cranes are commonly used on derrick barges and exploratory drill rigs. Safety concerns do exist, however, and the applicability of this measure should be studied on a case-by-case basis. Potential impacts from these activities can be lowered by effective activity management to ensure that testing and maintenance operations for emergency and standby equipment do not coincide.

Resource Transportation

Oil and gas produced offshore must be transported onshore for final treatment and eventual distribution to the marketplace. Produced gas is typically moved to shore by pipeline; produced oil can be either piped to shore or transported from the offshore site by tankers. Offshore storage facilities would be required in cases where oil was tankered directly from the offshore site.

Emissions: For pipeline transport, emissions result from the generation of the necessary electric power to pump the oil and gas to shore, as previously discussed. If tankers are used to transport crude oil to shore, emissions result from fuel combustion in the large diesel engines used to power the ship, and evaporative losses due to product loading and taking on ballast. Combustion emissions occur at the offshore production site, during vessel transit, and in port. Evaporative hydrocarbon losses occur primarily at the offshore loading location and in port; vapors saturating the airspace in the storage tanks at the offshore facility and on the tanker are displaced by the oil loaded into them. The amount of emissions produced are very dependent on the size of the tanker and the quantity of product being loaded or unloaded. ROG is the primary pollutant emitted, followed by SO₂ and NO_x. For a 40,000 barrel of oil/day (BOD) production scenario, ROG emissions can exceed 250 tons/yr.

Mitigations: Pipeline transport produces substantially less emissions than tankering and is the preferred method of resource transportation. If tanker transport is unavoidable, however, the use of steamships can achieve up to 60% reduction in the amount of NO_x typically emitted by diesel-fueled motorships; use of low-sulfur fuels can also provide significant reductions in SO₂ emissions. Evaporative losses can be reduced by requiring ships to use segregated ballast, and through effective vapor recovery systems on the ships, on the offshore storage facility, and at the marine terminal.

7.4.4 Support Vessel Operations

Varying levels of support, involving the use of supply boats, crew boats and helicopter transport, are required for each phase of offshore activity. Supply boats transport all of the food, materials, and equipment required at the offshore sites. When serving construction sites, such as platform and pipeline installation operations, they may also be used as additional deck space for staging of materials during the construction process. Many of the larger supply boats are also used as ocean-going tugboats. Most of the service boats rated for towing are in the 3000 horsepower to 7500 hp range, while ordinary supply boats are somewhat smaller.

Crew boats ferry the work crews back and forth from the sites to shore and range in size from about 680 hp to 1530 hp; most of the newer boats are about 100 ft in length and rated at about 1500 hp. Large helicopters are also used for crew transport when necessary; smaller helicopters are used primarily to transport VIP's and supervising personnel, and for medical emergencies.

Emissions: Emissions from crew and supply boats result from fuel combustion in the large diesel engines and from the small auxiliary generators which power the bow thrusters and provide electricity when moored or in port. The quantity of emissions produced is

project-specific and depends on the length and frequency of trips required and the type and size of engines used on the vessels. In addition, different activities produce different levels of emissions: idling and queuing in port and at the offshore site, maneuvering during crew or supply loading and unloading, towing during construction or installation, and cruising to destination. Depending on the project, emissions from support vessel operations can easily equal or exceed those caused by activities at the platform. NO_x is the primary pollutant emitted, followed by CO and ROG; SO₂ emissions depend on the sulfur content of the diesel fuel.

Helicopter emissions also depend on length and frequency of trips, type of engines, and amount of time spent idling and cruising. NO_x is the primary pollutant emitted during cruising, while CO and ROG are the largest emissions produced at idle.

Mitigations: Control of NO_x emissions from crew and supply boats can be accomplished through several different strategies used alone or in combination. Recent testing has shown that injection timing retard combined with an intercooled turbocharger can reduce NO_x emissions by at least 30%; enhancement of the intercooler configuration provides another 9% to 17% of additional control. Furthermore, a 15% decrease in vessel cruising speed has been shown to cause a substantial drop in fuel consumption; this can result in a further 45% reduction in NO_x emissions per nautical mile traveled.

The use of alternative fuels could reduce emissions by varying amounts depending on the type of fuel used. A combination of diesel and natural gas may provide up to 25% reduction in NO_x emissions, while substitution of propane for diesel fuel could realize a 90% NO_x reduction. Fuel switching is subject to the approval and code requirements of the U.S. Coast Guard and the U.S. Bureau of Shipping. Existing Coast Guard regulations prohibit the use of propane fuels on supply vessels.

Provisions for additional platform storage could reduce the time that a supply boat must queue at a platform when used to provide storage space for equipment and expendables. In addition, careful planning to consolidate vessel use can reduce the number of trips required for each project. For instance, the use of fewer, larger vessels for the transport of crew and supplies will result in reduced vessel trips. The coordination of shift changes between proximate platforms may further allow a single vessel to transport the crew or supplies for several platforms.

The use of helicopters for crew transport can also provide a significant reduction in NO_x emissions, depending on the percentage of trips committed to versus those actually achieved in practice. Helicopter use is restricted by weather conditions which affect visibility.

Finally, emission reductions may be achieved by locating a supply base in closer proximity to the Northern Santa Maria Basin, thereby significantly reducing travel distance to platforms in this region. Such a facility, however, would create a number of additional onshore emission sources: the idling and queuing of vessels in port; the associated operation of heavy-duty equipment onshore; and a substantial increase in heavy-duty truck traffic transporting supplies and equipment to the base. In addition, significant impacts to other sensitive resources need to be considered. Thus, the net potential benefit of this strategy cannot be determined until a

specific supply base proposal is analyzed. This subject is discussed in further detail elsewhere in this document.

7.5 Onshore Emissions and Mitigation Measures

The development of offshore energy resources requires an extensive network of onshore support facilities, including storage yards, pipelines, pump stations, marine terminals, supply bases, processing plants, etc. The construction and operation of these facilities can result in substantial air pollutant emissions with the potential for significant onshore air quality impacts. For purposes of this discussion, onshore support activities have been separated into construction activities and facility operations.

Construction

The nature and scope of project-specific onshore construction depends on the type and scope of the proposed offshore development and the adequacy of existing onshore support facilities. For most projects, however, the construction and installation activities and equipment used are similar.

Emissions: Construction activities generally involve digging, scraping, grading, lifting, trenching, hauling and other activities using large pieces of mobile construction equipment. Examples of such equipment include tractors, dozers, graders, cranes, trenchers, backhoes, dredges and various types of heavy-duty and light-duty trucks. Substantial quantities of PM are emitted as fugitive dust from these operations. In addition, the large diesel engines which power this equipment, and the diesel generators used to power the compressors, welding machines and other smaller equipment onsite, can be substantial emission sources when operating concurrently. NO_x is the primary pollutant emitted, followed by CO and PM. The quantity of emissions produced depends on the particular construction activity and the time period over which it occurs.

Mitigations: Although construction activities are temporary in nature they can cause significant short-term impacts which require mitigation, particularly on projects with several different construction phases. Reducing potential impacts is generally accomplished through the joint application of both direct control strategies and activity management techniques. Retarded injection timing can reduce NO_x emissions from the diesels by 15 to 20%; a simultaneous increase in the air-to-fuel ratio can achieve an additional 15% reduction. SO₂ emission impacts can be reduced through the use of low-sulfur fuels. Water sprays can be used to reduce fugitive dust emissions in areas under active construction; chemical soil binders or permanent dust control measures may be applied in areas no longer subject to construction activity.

Activity management can also provide effective mitigation of construction impacts. Careful planning can minimize the overlap periods between concurrent construction operations by extending or phasing certain activities. In addition, the equipment spread can be monitored and

adjusted to ensure that emissions from large equipment do not accumulate in localized areas due to unnecessarily bunched activity. Although no direct emission reductions are achieved by these techniques, effective activity management can reduce the significance of potential impacts through minimizing the simultaneous occurrence of emission generating activities.

Facility Operations

Resources produced offshore must usually be processed, refined and stored at onshore installations prior to marketing. Additional support facilities covering a broad range of coastal-based activities are also required to provide service, supplies, and port capabilities for the day-to-day and long-term operational needs of the offshore oil and gas industry. Thus service and supply bases, storage yards, marine terminals, pump stations, processing plants and refineries are all part of a complex onshore infrastructure required to support offshore development. Existing oil and gas production facilities within the county include a refinery on the Nipomo Mesa, marine terminals in Morro Bay and Port San Luis, and several tank farms. In addition, a large gas processing plant and a small oil refinery are located nearby in Santa Maria, and an oil processing and treatment plant is proposed for the Nipomo Mesa as part of the San Miguel Project.

Emissions: Onshore resource processing can range from a simple oil dehydration facility to a complex gas processing plant or oil refinery, depending on the type and intended use of the product. Emissions from an oil dehydration facility are usually much smaller than those produced at an oil refinery or gas processing plant. NO_x is the primary pollutant emitted in all cases due to natural gas combustion in the processing equipment. Flaring events may create substantial emissions of SO₂ depending on the sulfur content of the flare gas. Fugitive hydrocarbon emissions also result from leaking process components and storage tanks. The quantity of emissions produced by each device depends on the type, configuration and throughput of the facility.

Emissions from a service and supply base generally result from the queuing and idling of crew and supply boats which operate from there. Emissions from marine terminals result from tanker loading and ballast operations. Both topics are discussed individually in previous sections.

Mitigations: Processing and refining facilities are subject to the rules and regulations of the APCD, which typically require implementation of Best Available Control Technology (BACT) for each pollutant-emitting device at the facility. This may include Selective Catalytic Reduction (SCR) and water injection for gas turbines; low-NO_x burners and flue gas recirculation for boilers and heaters; vapor recovery and gas blanketing for storage tanks; a stringent inspection and maintenance program to minimize leaks from valves, flanges, seals and other process components; smokeless flares; and retarded ignition timing on standby and emergency equipment. New or emerging control technologies could also be required. The type and extent of emission control required is very dependent on the type and nature of the facility equipment and operations under consideration.

7.6 Major Issues

Several important issues exist which bear directly on the offshore development process as a whole and require separate consideration. The following discussion deals with the most pertinent air quality aspects of those issues.

Permit Actions By Other Agencies

As noted previously, the complexity and scope of the offshore development process precipitates the need for regulatory review by many different agencies. Permit issuance for the various facets of a project proceeds along a schedule which, for certain phases, is predetermined by statutory deadlines. However, in many cases the regulatory schedule is set by the timing of the application for a required permit. Regulatory review and decision-making for the different permits may occur concurrently or sequentially depending on the goals and strategy of the applicant. Decisions made early on can affect the options available in the later stages of the regulatory process. For instance, design decisions and regulatory requirements made in the issuance of initial permits may limit the type of mitigation strategies to be considered during the environmental review process. This is particularly true for air quality mitigation, which often requires equipment or process modifications or the installation of additional control equipment.

The determination of appropriate emission controls should be driven by technical and economic feasibility considerations, not by consequential decision-making. A comprehensive scoping process should be implemented for each project to allow critical input by all affected agencies prior to the granting of any regulatory approvals to proceed. The new EPA air quality regulation for OCS sources, when adopted, will facilitate this goal.

Project vs. Cumulative Development

Several separate air quality analyses performed in the recent past have predicted exceedances of state and federal ozone standards to occur in San Luis Obispo County with even limited OCS development in this region. The MMS air quality analysis for LS 73, the Northern Santa Maria Basin (NSMB) Area Study, and analyses done for the 1987-1992 MMS 5-Year Leasing Program all predicted significant impacts to result from emissions generated by 1-3 production platforms offshore the Central Coast. In addition, air quality modeling for the NSMB area study also predicts significant air quality impacts from the onshore oil and gas processing necessary to accommodate the projected area buildout.

The rapid expansion of offshore energy development in the Santa Barbara Channel during the 1980's has contributed to the substantial air quality problems faced by Santa Barbara County. As identified in the above-mentioned MMS 5-year leasing plan, a severe shortage of available emission offsets has become a limiting factor in planning for additional development south of Pt. Arguello. Industry attention is thus expected to be increasingly focused on the Northern Santa Maria Basin. Exploratory drilling has already been completed on many NSMB tracts with promising hydrocarbon potential. As the price of oil rises, development pressures on these

tracts will increase. As indicated in the referenced studies, the attendant air quality impacts of offshore development may be substantial and could contribute to or increase existing ozone levels in the region.

San Luis Obispo County is a nonattainment area for the state ozone and PM10 air quality standards. Implementation of the 1991 Clean Air Plan (CAP) for this county requires an aggressive rulemaking schedule that will reduce ozone precursor emissions from existing sources by 40% between 1992 and 1998. No net emissions increase is allowed from any modification of an existing source or location of a new source in this county. Thus, emissions from future offshore exploration and development must be controlled to the maximum extent feasible and residual emissions fully offset.

Consideration of this information is crucial to the regulatory process that accompanies each individual project. Decisions made on one project may ultimately affect the manner in which future projects can and will be configured. This is of particular concern with respect to the long-term availability of offsets for both onshore and offshore development. Cumulative impacts must therefore be given significant weight, as required by CEQA, when determining the mitigation appropriate to each project. Failure to do so could limit the regulatory options available for other projects and may ultimately preclude future development both onshore and offshore.

Mitigation Feasibility

Evaluating the feasibility of a potential mitigation measure is necessary to the determination of its applicability to a given project. In making this determination several parameters must be considered: the effect of the measure on process operations; the technical difficulties involved in its implementation; and the economic impact it places on the project. The determination of operational feasibility focuses primarily on ensuring that the required mitigation will not result in unsafe project operations. Technical feasibility involves analyzing whether the measure is currently available and has been proven in similar operations; or alternatively, whether sufficient test data and other information exist to warrant the application of a control strategy not yet proven in the field. In either case, both operational and technical feasibility determinations are fairly straightforward and are based on sound engineering analysis. The determination of economic feasibility is a much more difficult task, requiring the use of complex financial analysis techniques. The capital and operational costs, and their projected change over time, must be determined to evaluate the impact of the measure on the financial viability of the project. An overall feasibility determination can then be made based on the comprehensive information developed in the analysis.

The feasibility analysis should not be influenced by any construction or other substantial project commitments begun prior to completion of the County's regulatory review process. This includes preconstruction of platform components, purchase of equipment, scheduling commitments and so forth. Consideration of these factors is inappropriate from a procedural and regulatory standpoint and would set undesirable precedents. In choosing to proceed prior

to regulatory approval, an applicant accepts the risk that later decisions may require project modifications.

Determination of feasibility is a complex process. Much of the information required is proprietary, and the ultimate conclusions reached are often open to subjective interpretation. Formal guidelines should be developed to identify the information required in the analysis and to establish evaluation criteria by which to judge feasibility.

Platform Electrification

Offshore platforms have typically met their power requirements by using on-board turbine generators, as well as separate diesel prime movers (engines) to operate various other equipment. These combustion sources are usually responsible for over 90% of all emissions produced at the platform, with the turbines representing the major emission source. Electrification of platforms and facilities (except for emergency and standby equipment) can reduce the need for onsite combustion sources and is the most effective method currently available to substantially reduce emissions of all pollutants. For the purposes of this discussion, platform electrification refers to the provision of power to the platform through a subsea electric cable from an onshore power source.

Various degrees of platform electrification are possible, each involving different technical and economic considerations. Full electrification typically involves the use of onshore power for most of the non-heat power demands of the platform; it also includes replacement of prime movers, such as those for drilling rigs or platform cranes, with electric motor drives if feasible. Partial electrification can have many configurations, including the combined use of both subsea cable and on-board turbines to provide platform power; it may or may not include substitution of electric motors for the prime movers.

The feasibility of platform electrification, and the degree to which it can be accomplished, is dependant on many variables. Factors to be considered include project electrical needs, process heat requirements, project design, safety concerns, available electric power sources, and cost of electrification. Technical difficulties associated with platform electrification are more easily resolved if addressed early in the design phase of the project. Economic concerns are more often the determining factor in how a project is ultimately configured.

The cost of purchased power from the onshore utility grid can be substantial over the life of a project and may result in a shorter economic life. This concern must be weighed against the air quality benefits of electrification and its effect on future development in the area. Modifications to utility rate structures or the use of onshore cogeneration may help reduce the financial burden of this emission reduction measure. Onshore cogeneration in particular may offer economic incentives for platform electrification, considering the cost of offsets and the need for additional power and heat for the onshore processing.

The use of utility grid power or onshore cogeneration for any platform configuration would create additional emissions onshore to some degree, but at a much lower level than those resulting from offshore power production. Emissions generated by the utility grid to meet the power demands of an offshore project would likely originate at several different power plants within the grid system. In addition, a large portion of that power demand would be met using nuclear and hydropower, which do not cause NOx or ROG emissions; fossil fuel-fired plants would contribute only during the hours and seasons of peak load demand. Thus, additional emissions from the utility grid would not occur on a continuous basis and would likely be widely dispersed. Emissions from onshore cogeneration, in contrast, would originate at a single stationary source and typically result from the use of turbines similar to those used offshore. However, onshore control technology is significantly better, with up to 90% reduction in uncontrolled NOx emissions possible through the use of selective catalytic reduction. Emerging control techniques for onshore equipment promise even greater NOx reductions in the near future.

Platform electrification is currently the most effective means available for reducing emissions, at the source, of all pollutants from offshore development and production operations. An electrification feasibility analysis should be performed for each proposed platform prior to submission of a Notice of Intent (NOI) to the EPA by the project applicant. The feasibility analysis should undergo review by all affected air quality agencies prior to a consistency determination by the California Coastal Commission.

Offsets

Emissions from offshore energy development, even after application of maximum feasible mitigation, will cause a long-term increase in the overall pollutant burden of the region. NOx and ROG emissions, in particular, pose a threat to the air quality attainment status of the county due to their contribution to elevated ozone levels during periods of adverse meteorology. This potential impact can be offset by requiring project applicants to achieve emission reductions at non-project sources in an amount necessary to compensate for permitted project emissions. Specifically, all emissions of NOx and ROG, after implementation of all required onshore and offshore air quality mitigations, should be fully offset by emission reductions from existing sources within the project impact area. These offsets should be acquired according to the requirements and guidelines of the District's New Source Review Rule.

It is important to note that offsets are not a substitute for feasible emission controls at the source. They are not as effective as source controls in mitigating air quality impacts, and the supply of available offsets is limited. Unnecessary use of offsets by offshore projects could reduce their availability to onshore projects, thereby limiting the potential for future expansion of onshore industry in the county. Thus, offset usage should be managed wisely to preserve them as a necessary resource for future growth.

7.7 Policies

The following policies address issues that pertain to the general subject of offshore energy development and those which are specific to the individual phases of the process as presented in this chapter.

1. The development of offshore oil and gas resources is a lengthy and complex process requiring interaction and cooperation among many different agencies. To that end, the following policies shall be adopted:
 - A comprehensive scoping process at the start of each proposed project to receive input from all affected agencies prior to any regulatory approvals to proceed.
 - A statewide Technical Advisory Committee (TAC) be established to provide preliminary review of proposed modeling protocols, feasibility studies for platform electrification, and general technical oversight for the air quality review process on each project. Participating members should include the EPA, MMS, ARB, the affected APCD's, industry, and an independent air quality consultant.
2. The performance and review of air quality analyses is also a complex and controversial process. Consistency in approach, methodology and interpretation of the analysis is necessary to provide an adequate basis for decision-making. As such, the following policies shall be adopted:
 - Require the performance of a thorough, cumulative assessment of potential ozone impacts for each project, using an analysis approach approved by all affected agencies.
 - Development by the TAC of formal guidelines for the performance of a platform electrification feasibility analysis. The guidelines should include identification of the information and methodology to be used as well as the evaluation criteria by which to judge feasibility.
 - Further development of the regional air quality monitoring network is needed to enhance the air quality database for impact analysis and decision-making, and to track the future impacts of offshore development.
 - Request MMS to install meteorological buoys offshore Pismo Beach and Morro Bay to provide baseline offshore meteorological data for this region.
3. Establish firm policies to protect air quality in the county from the impacts of offshore energy development. Specifically, the following policies shall be adopted:
 - Oppose all future lease sales along the central coast until the actual impacts from development of existing leases are determined and mitigated to levels which will not cause violations of state or national ambient air quality standards.

- If future lease sales do occur, request lease sale stipulations be adopted which require a platform electrification feasibility analysis to be performed and submitted with each Development and Production Plan. Platform electrification from an onshore power source should be required to the maximum extent feasible, as identified in the analysis; other mitigation alternatives could also be considered, provided they achieve an equivalent level of emission reduction.
 - Require that significant consideration be given to potential cumulative impacts when making project-specific decisions.
 - Require maximum feasible mitigation of ozone precursor emissions from offshore energy development projects.
4. Request Environmental Protection Agency and California Coastal Commission to place the following conditions on offshore exploration activities:
- Scheduling of exploration activities during the period between November and June to avoid impacts during the peak ozone season, provided that it does not conflict with seasonal limits for other sensitive resources and does not require operations during unsafe weather conditions.
 - Limit the number of drill rigs which can operate concurrently within a specified region.
 - Require the use of Caterpillar D-399 diesel electric generators on the drilling rigs, if feasible, or other prime movers with equivalent emissions. If not feasible or available, vessels with controlled emissions in the lower half of the exploratory vessel fleet (i.e. - the "cleanest" vessels) should be required.
 - Require helicopter transport of personnel, except during unfavorable weather conditions, to reduce the simultaneous occurrence of crew and supply boats at the drilling unit. If crew transport by boat is unavoidable, then careful scheduling of crew and supply boats should be required to reduce simultaneous occurrence at the platform.
 - Require maximum feasible mitigation of NO_x and ROG emissions from the crew and supply boats which service the drilling unit (see support vessel recommendations below).
 - Require that crew and supply boats not be present together at the drilling unit during scheduled flaring for drill stem testing.
5. Require that the following mitigation measures be implemented for construction activities associated with offshore platform and pipeline installation:

- Require the use of Cat D-399 diesel electric generators on derrick and lay barges, if feasible, or the use of other prime movers with equivalent emissions. If direct injection diesels are used, injection timing retard of 4° and adjustments to the air-to-fuel ratio should be applied to reduce NO_x emissions.
 - Require maximum feasible mitigation of NO_x and ROG emissions from all support vessels involved in construction and installation activities, including crew and supply boats, light-duty tug boats and other applicable vessels (see support vessel recommendations below).
 - Require the use of low-sulfur diesel fuels on all support and installation vessels operating within 3 miles of shore.
 - Require the development of a comprehensive activity management plan designed to reduce the simultaneous occurrence of large polluting activities where possible.
6. Require that the following emission control strategies be implemented for all offshore development and production operations:
- Platform electrification from an onshore power source, which currently represents the best available control technology (BACT), shall be implemented to the maximum extent feasible at the earliest stage of development; feasibility determinations should not include consideration of any construction of project components begun prior to completion of the regulatory review process. Other mitigation alternatives should also be considered if they can achieve equivalent emission reductions.
 - Use of natural gas for fuel and Best Available Control Technology (BACT) on all turbines permitted for use on platforms.
 - Use of ARB-certified automotive diesels on all independently-powered equipment for which electrification is demonstrated infeasible (e.g. - cement pumps, logging units, cranes, vessel generators, etc.).
 - Use of low-NO_x natural gas-fired heaters for process heat needs, if applicable and feasible; applicability and feasibility should be determined during the platform electrification study.
 - Implementation of a rigorous inspection and maintenance program for detection and repair of process components and equipment which cause fugitive hydrocarbon emissions.
 - Use of state-of-the-art flare systems; restricting flaring events to documented emergencies, process upsets, well testing and scheduled maintenance.

- Implementation of a comprehensive activity management plan to minimize the simultaneous occurrence of NO_x generating activities.
 - Use of helicopters rather than crew boats for transport of personnel, except during unfavorable weather conditions.
 - Use of pipelines rather than tankers to transport produced crude to shore.
 - Assure that platform design includes sufficient storage capacity to minimize the use of supply boats for added deck space.
7. Require maximum feasible mitigation of NO_x and ROG emissions from all support vessel operations associated with exploration, development and production activities. The following control strategies have been demonstrated, or have the potential, to achieve significant emission reductions:
- Use of injection timing retard of 4° combined with an enhanced intercooler on the turbocharger for all vessels under contract to a project. Limit the use of uncontrolled, spot-chartered vessels to scheduled downtime or emergencies requiring an extra vessel.
 - Reduction of vessel cruising speed to 15% below top speed.
 - Use of alternative fuels, such as propane or a dual-fuel mix, if feasible and able to comply with applicable regulatory restrictions.
 - Implementation of a comprehensive activity management plan designed to consolidate vessel use and reduce the number of trips required for each project.
8. Require the following measures to be implemented for the construction and operation of all onshore facilities associated with offshore energy development:
- Require each project to develop and implement a comprehensive Construction and Installation Emissions Mitigation Plan (CIEMP) covering all phases of onshore construction. Such a plan would specify the equipment, emission controls and activity management techniques to be employed to achieve compliance with local, state and federal ambient air quality standards.
 - Conduct onsite inspections of construction operations to assure compliance with the CIEMP.

The policies given above emphasize the need for stringent air quality protection while recognizing the unique and variable nature of the offshore development process. Adoption of these recommendations will provide guidance to future project applicants and regulatory direction for future development offshore San Luis Obispo County.

CHAPTER VIII: ONSHORE FACILITIES

8.1 Background

Commercially viable petroleum and natural gas reserves have been identified offshore the county. A proposal to produce and transport these reserves would normally include onshore facilities. Often, much concern given such a project goes to the potential of offshore portions to cause air pollution, oil spills, habitat disruption, and aesthetic degradation. Though county decisions can be expected to have effects beyond county borders, the county's ability to affect placement and mitigation of platforms and pipelines off its coast is unsettled. County authority to approve or disapprove pipelines, processing facilities, refineries, marine terminals, storage tanks and related facilities proposed within its borders is unchallenged. The county's most direct concern lies with location, characteristics, and impacts of onshore facilities.

Decisions on approval, location, and mitigation of onshore facilities supporting offshore development may affect the county's rural residential and agricultural character, its quality of life, and its rate and type of growth. Onshore facilities can be heavy industry. They bring potential hazards which require sensitive siting and sufficient buffering from other land uses. Environmental, political and economic concerns are inevitable and sensitive.

This chapter addresses the environmental review, siting, and permitting of petroleum and natural gas processing facilities. These can include: petroleum upgrading and refining facilities, heat and pump stations, storage tanks, and tank farms, pipelines, and other related facilities. The chapter discusses the qualities of these facilities as well as particular characteristics of different facility types. It contains specific recommendations on paths and criteria for siting decisions and for resolving major mitigation issues when facilities are sited.

8.2 Description of Resource

San Luis Obispo County is a rural coastal county located midway between San Francisco and Los Angeles. It is bounded on the north by Monterey County, on the east by Kern County, on the south by the Santa Maria River and Santa Barbara County and on the west by the Pacific Ocean. Its physical characteristics include low volcanic and tectonic mountains, high dunes, sandy beaches, fertile coastal and inland plains, and arid regions. Air quality has been generally good but is deteriorating. (See air quality discussion in Chapter VII.) Water is scarce.

The county has significant wetland and other sensitive habitat, and consequently, a rich biotic diversity. Several state and federal threatened or endangered species, and many candidate species are resident or transient. (Please see Chapter V.)

Significant numbers of people work in the tourist, service, energy, and agricultural industries. There are also a large number of people working in government, primarily at institutions such as Camp Roberts, California State Polytechnic University, California Men's Colony, and the Atascadero State Hospital. Many people of retirement age have moved to the county.

Present Petroleum Activity: Several onshore petroleum facilities exist in the county. There is a refinery on the Nipomo Mesa, marine terminals in Estero Bay and at Avila, a small number of producing fields, tank farms and pump stations, and associated equipment. Figure VIII-1 shows most of the locations of various facilities in the county.

Geophysical surveys, leasing, and exploratory drilling have occurred in federal waters offshore the county. Commercial reserves of oil and gas have been discovered in federal waters off the southern portion of the county. Platform Irene, located off Point Sal, is the closest offshore platform to San Luis Obispo County. Oil from a platform off Santa Barbara County is being partially refined at Unocal's Santa Maria Refinery in southern San Luis Obispo County. These products are then shipped from Avila by tanker or pipeline.

State waters off the county have been declared a sanctuary. As long as sanctuary status remains, no drilling or production can occur between the high tide line and three miles off the coast.

Trends: Over the past several years, cities and rural areas of the county have experienced rapid growth in population and in residential and commercial activity. Growth has been concentrated on relatively level land in the western half of the county. The issues of managing growth and limiting rates of increase are ongoing concerns. The low supply of water and the high price of land are significant issues in developing areas.

The existence of commercial reserves of oil and gas offshore has created pressure to site industrial development onshore. In the past, facility siting efforts have focussed on the rural coastal zone in the southern part of the county. As more offshore leasing and development is proposed, pressure for onshore support facilities can be expected to spread to other coastal portions of the county.

The trend toward residential expansion in rural areas may conflict with efforts to site onshore industrial facilities to support offshore production. There are incompatibilities between industrial and residential growth, and between petroleum industry needs and the expectations of many county residents. One purpose of this chapter is to identify and discuss these issues.

8.3 Regulatory Setting

Various federal, state and local provisions affect the siting and characteristics of onshore facilities. Following sections discuss those elements of the regulatory framework which most affect local government. In addition to provisions mentioned below, air quality regulations, detailed in chapter VII apply.

Figure VIII-1
Location of Oil and Gas Facilities in San Luis Obispo County

Local Coastal Plan - Coastal Zone Land Use Ordinance: Initial siting applications for onshore facilities will likely focus on the county's coastal zone. Even if facilities are proposed inland, pipelines and other transmission facilities will pass through the coastal zone. Consequently, the primary land use regulations affecting onshore facility development are likely to be the county's Local Coastal Program (LCP) and Coastal Zone Land Use Ordinances (CZLUO).

The LCP and CZLUO contain various provisions regulating energy facilities. Regulations include the plan's energy and Guadalupe Dunes policies, various area and community standards in the Framework for Planning, and ordinance provisions specifically addressing petroleum processing, pipeline, and related facilities. These documents now address onshore facilities in a general fashion, but with specific recognition for facilities within the Unocal refinery tract or the oil field in the Guadalupe Dunes. Certain types of facilities likely to be proposed, such as natural gas processing facilities, are not specifically addressed in these documents.

Land Use Element-Land Use Ordinance: Development outside the Coastal Zone is regulated by the County Land Use Element (LUE) and Land Use Ordinance (LUO). The LUE and the LUO address general issues and list certain requirements for onshore facility siting, focusing on petroleum processing and transmission. Area and community standards in the LUE also focus on these same issues.

Measure A: In 1986, San Luis Obispo County voters passed Measure A which has been incorporated into the LCP. Section 1 of Measure A provides:

No permit, entitlement, lease, or other authorization of any kind within the County of San Luis Obispo which would authorize or allow the development, construction, installation or expansion of any onshore support facility for offshore oil and gas activity shall be final unless such authorization is approved by a majority of the votes cast by a vote of the people of the County of San Luis Obispo in a general or special election. For the purpose of this ordinance, the term "onshore support facility" means any land use, installation, or activity required to support the exploration, development, production, storage, processing, transportation, or related activities of offshore energy resources.

Coastal Act: The state Coastal Act provides for review of local decisions on siting energy facilities in the coastal zone. A local decision to deny a project that the California Coastal Commission deems of regional or statewide interest can be reviewed and reversed on the Commission's own motion. The Coastal Act also provides that the Commission exercises original permit jurisdiction where a local coastal plan has not been approved. The Commission has permitting authority over projects proposed for state waters, and is empowered to determine whether a project proposed in federal waters is consistent with the California Coastal Management Plan. (See Chapter II) The consistency determination and the state waters permit can lead to mitigation of onshore impacts. There can be differences between Commission and local decisions regarding the permitting of a project.

California Environmental Quality Act (CEQA): The California Environmental Quality Act (CEQA) and its accompanying guidelines direct local agencies to analyze and evaluate the environmental consequences of siting or not siting projects when reviewing applications for onshore facilities. CEQA's broad scope and pervasive analytical requirements compel agencies to evaluate project impacts and the effectiveness of mitigations across a full range of affected local interests. If more than one agency makes permitting decisions on a project, CEQA obligates the lead agency to consider the entire project when making decisions. CEQA empowers an agency to deny a project found to have unavoidable significant negative impacts.

While fulfilling CEQA obligations and appending permit conditions to approvals, local governments have addressed impacts from the offshore portions of oil and gas projects. Federal, state, and local agencies disagree on the extent of local government's decision-making role offshore, especially in federal waters.

Interagency Coordination: Agency coordination in evaluating applications furthers both consistent decision-making and responsiveness to the public and to applicants. Agency coordination is essential in responding to emergency events. Interagency environmental reviews are usually conducted by joint review panel representatives from primary permitting agencies. Documents may be prepared to serve National Environmental Protection Act (NEPA) as well as CEQA purposes.

Pipeline routes spanning more than one county or crossing through incorporated communities require obvious coordination measures. Assuring the availability of a sufficient number of personnel and vehicles to respond to a major refinery, processing plant, or tank farm fire could require cooperative agreements among city and county fire fighting agencies of one or more counties. Existing agreements should be assessed and updated as new facilities are proposed and possibly approved.

8.4 Operations

A diversity of potential hazards are typically associated with onshore facilities. These hazards exist because crude petroleum, natural gas and associated fluids and solids are flammable, explosive, or toxic. These materials are both subjected to intense applications of energy in the form of heat, pressure, etc., and are moved or stored in large quantities.

Facilities: Treatment and storage facilities supporting offshore development have several common characteristics. They present potential flammable, explosive, odor, and air pollution hazards which require distancing from other uses. They are technologically sophisticated, requiring careful construction and subsequent detailed inspection. These facilities may be massive. They have the potential to significantly affect a full range of environmental interests.

A tank farm, which normally has a large number of large cylindrical hydrocarbon storage tanks, may be required at a treatment facility or at a point along a pipeline route for storage or for blending crude, processed, or refined petroleum. Storage tanks present the most siting

difficulties associated with treatment facilities. Tanks can be visually intrusive, a potential fire hazard, a source of spills, and a threat to ground water, if not properly designed, sited, and mitigated.

These types of facilities are not the only treatment/storage facilities which may be proposed for the county in support of offshore development. The Santa Maria refinery partially refines offshore oil taken from Unocal's platform Irene, located off Point Pedernales, in Santa Barbara County. The potential exists for full or partial upstream refining of other Santa Maria Basin crudes as a means of improving shipment and marketability characteristics. Various other processes intended to upgrade heavy, viscous Santa Maria basin crudes have also been suggested.

Offshore developers may propose onshore electric co-generation plants. Co-generation plants could supply electricity to platforms while minimizing emissions to the air. Sweet or sour gas from the offshore reservoir might be brought ashore to fuel turbines, or fuel could be bought from companies such as Southern California Gas. Co-generation facilities do not treat or store hydrocarbons, but should be included in this grouping.

A smaller hybrid facility, (sometimes called a heater-treater), may include a heat-and-pump station which could be necessary to serve heavy crudes. A heat-and-pump station consists of a pump and a reheating unit. It may include a stripper unit that separates out impurities from the crude oil. The application of heat and pumping force are necessary to keep heavier crudes fluid and moving in the pipelines.

Transmission facilities which may be required to develop offshore resources include pipelines and electric transmission lines. Pipelines move a variety of fluids such as crude, diesel, other petroleum products, sweet or sour natural gas, natural gas liquids, and water. Electric lines may move current from a distribution grid or co-generation plant to onshore or offshore facilities. Normal transmission facility routing is a straight line between points of service. Pipelines and electric lines are allowable, subject to CZLUO permitting requirements, in all land use classifications in the county.

Materials: Crude oil, natural gas and other reservoir fluids found on the central coast are normally extracted in conditions rendering them unsuitable for sale or long distance shipment. The industry need to promptly improve the crude would require onshore treatment and storage facilities near the southern San Luis Obispo County or northern Santa Barbara County coasts and near Morro Bay for crude and gas produced from offshore northern basin reservoirs. Complete processing of northern basin crudes in the confined area of a platform is unlikely.

Petroleum may emerge in an oil-water or water-oil emulsion containing various metals, soils and other impurities. The impurities increase viscosity, reduce capacity for laminar flow, and raise shipment expense. Crude may be improved onshore in a processing facility, which dehydrates and removes impurities, in a refinery, which "cracks" crude (breaks it into various

components), turning it partly or completely into a variety of petroleum products, or in an upgrading facility which produces high quality synthetic crude.

Onshore and offshore facilities are often mechanically interdependent. A project design may be integrated to a point where the offshore platform and the onshore processing facility function as a single unit. One northern Santa Maria basin project proposed partial offshore and partial onshore processing of its reservoir production.

Offshore northern Santa Maria basin crudes have exhibited unusually low API gravities (the lower the API gravity the thicker the crude) and high viscosities. These qualities multiply difficulties in shipping and end use. Significant quantities of diluent, refractants, and heat may be required to ship the crudes to shore.

Untreated natural gas from a reservoir may be impure, flammable, explosive, and toxic. At all points from production to sale, it has to be isolated from flame, spark, and non-process heat. Gas extracted from northern basin fields likely will contain significant concentrations of hydrogen sulfide (H₂S). H₂S is toxic on inhalation at concentrations of 600 parts per million or more, and must be reduced before gas is brought into the distribution and sales network. The removed sulfur is also classified as hazardous. Gas processing creates, as byproducts, liquid petroleum gas and natural gas liquids. The fluids are useful, but are also flammable and explosive.

Construction: Construction includes the movement of machinery, large prefabricated pieces of metal, quantities of smaller metallic and other construction materials, piping, electric wiring, construction machinery, foundation materials, and similar supplies. Thousands of gallons of water per day may be needed for drinking, construction use, and dust control. Fork lifts, cranes, dozers, compactors, trucks, vibrators, generators, welders and similar machinery are required. An example of a typical construction scenario for a processing plant is attached as Figure VIII-2.

The elapsed construction time for a treatment, storage, or co-generation facility will vary depending upon circumstances. A refinery or natural gas processing plant could take a longer time, while a co-generation facility or a storage facility alone might take somewhat less. In addition to primary facilities, construction might include roadways, building and parking areas, and containment berms.

For any large facility, peak construction work force will number in the hundreds. The skills and jobs required for the work force will change over the course of construction. Networker in-migration is an issue of concern not only to local government agencies dealing with the consequences of in-migration, but to the local work force. The Socioeconomic Monitoring Program (SEMP), administered by Santa Barbara County Council of Governments attempts to monitor and mitigate this impact.

Site preparation involves clearing and stripping vegetation. Stripped material is removed for disposal, and grading, contouring and compacting occurs. Hundreds of thousands of cubic yards of soil may be moved in such cut-and-fill operations, depending on site topography and the intended facility.

Fuel and electric power are required during construction, as are construction machinery, welding tools, and earth moving equipment. Companies often prefer to run construction sites on a continuous 24 hour basis, with bright lighting to allow site preparation, fabrication and assembly.

Operation: Crude oil and natural gas are normally extracted from reservoirs in emulsions, mixtures of several fluids. The primary purpose of processing is to separate and dispose of the other fluids and gases in the crude oil stream. Treatment facilities use chemicals, heat and other physical processes to dehydrate and to remove impurities from crude petroleum and natural gas. Storage facilities contain hydrocarbon-based fluids for batch shipment or blending.

Treatment facilities normally require large quantities of electricity, natural gas, waste heat, if available, and chemicals to conduct their operations. Facilities will normally require substations or co-generation plants for electric power. Natural gas for treatment and co-generation may be supplied from the reservoir or from local gas distribution companies.

Natural gas removed from the emulsion may be injected into a natural gas processing stream, used for fuel at a processing facility, or processed and sold. Produced water comes up with the crude oil and is treated to remove oil and other impurities before discharge at an offshore platform or injection into an underground reservoir. Sulfur removed from the hydrocarbon stream is normally transported by truck or rail. Any fluid stream containing natural gas, including crude petroleum with entrained gas, requires a flare system for maintenance and emergency purposes.

Process control and office functions at a site are carried on by a small number of people. An administration building and one or more buildings housing equipment and storing materials can be expected. Communication equipment, such as microwave equipment, would be installed to link onshore facilities with offshore platforms and other company operations.

8.5 Impacts

Petroleum and natural gas treatment and storage facilities and co-generation plants are large industrial operations which can emit pollutants to the air and water, require lengthy and intensive construction, and pose potential problems for the community in the event of upset or accident. The materials used in operations, the residues produced by different processes, and the hazardous nature of crude oil and natural gas and various products may cause adverse impacts.

Figure VIII-2
Example of a Construction Schedule

Treatment facilities can be significant consumers of electricity. Depending on processes used, natural gas processing typically consumes extremely large volumes of water, can be expected to emit pollutants and odors to the atmosphere, to continuously require and produce hazardous materials which have to be removed from the site, and to have potential to alter topographical and surface water flow patterns.

Construction Impacts: Major construction impacts include noise, especially from assembling large pieces of metal, the repetitive motions of machinery, traffic, and air quality degradation in the form of dust and engine emissions. Noise causes more severe impacts in evening hours, early morning hours and at night than during the normal working day and more impacts on weekends than week days. Housing, health and community services impacts may be caused by in-migration of construction workers. Habitat disturbance, loss of archaeological resources, alteration of surface water flow patterns, topographical alterations, and spills of fuels and lubricants may also occur. Construction impacts can be considered of relatively short duration in the sense that many construction events are transient, and overall construction stages will normally be measured in months rather than in years.

Construction may provide employment for hundreds of workers for several months, creating substantial temporary impacts in areas ranging from housing demand to transportation. During site preparation and construction, substantial traffic congestion in a site's vicinity caused by moving materials and workers is the norm. A variety of air emissions, fluid discharges, and refuse can be expected. Continuous construction is incompatible with residential neighborhoods.

Transmission Line Construction Impacts: Impacts from pipeline construction can be expected to be short term in any given area. On the other hand, pipeline construction impacts are ordinarily more severe than any normal operational impacts.

Pipeline ruptures are considered abnormal (unplanned) operational events. While this chapter does not deal with the consequences of spills or leaks, with environmental degradation from released oil, or with ignition or inhalation of released gas, it is clear that hydrocarbon releases result in the largest detrimental impacts. Improved long-term monitoring for hydrocarbon presence has the potential to reduce and better define impacts. Certain siting considerations which may reduce the likelihood of ruptures or the magnitude of their consequences are mentioned in the section that follows.

Impacts from electric transmission facilities may be greater during operation than construction. If a facility site is not near high voltage lines, the applicant or PG&E may have to construct or expand transmission corridors. Upgraded transmission lines, in turn, may impact the health or the aesthetics along the route.

Operational Impacts: Potentially significant long term impacts from operation of treatment, storage and co-generation facilities include pollutant and odor emissions to air and water, adverse effects on human health and natural habitat, groundwater consumption, contamination of surface water, noise from pumps and other equipment, visual impact from industrial

equipment and flares, and spills of hazardous materials. Potentially significant land use related impacts include induced industrial and commercial growth in surrounding areas, incompatibility with residential, recreation or other low intensity uses in rural regions, taking of land particularly suitable for other purposes such as agriculture, and the potential for subsequent expansion of heavily industrialized areas. When operating, a facility may provide a relatively small number of permanent jobs. Initial tax revenues to the county general fund might be substantial, but not likely significantly larger than the cost of demands on county services attributable to the facilities.

Applications regarding permits for an onshore facility should include material which addresses concerns such as; land slumping, surface water and ground water contamination, disturbance or loss of significant habitat including damage to threatened, endangered, or sensitive species, and loss of archaeological resources. Noise reaching nearby residents, workers or visitors, the incongruent siting of large industrial facilities in otherwise rural, residential, or commercial landscapes, demands on community services, and traffic congestion and damage to roadways should also be considered. Many of these concerns can be resolved or diminished by careful siting, design, and mitigation, and by confirming that measures either proposed by a proponent or imposed by a governmental agency are actually performed in the course of construction and operation.

8.6 Siting, Design, and Mitigation Considerations

The most significant mitigation in locating onshore facilities is selecting a site which minimizes the adverse consequences of interactions between the facility and the surrounding region's populace, habitat, and land uses. Affirmation of compliance with permit conditions is essential before facility start-up, and procedures should reflect this requirement.

Given the existing leases in federal waters and the continuation of federal lease sales, applications for onshore facilities can be expected over time along the length of the county's coast. In coastal areas, few industrially designated parcels could accommodate large onshore facilities. As residential and related development increases in coastal areas, difficulties associated with siting onshore facilities will grow.

Buffer Zones: Siting potentially hazardous operations requires a piece of land which (alone or with adjacent undeveloped parcels) provides an undeveloped or compatibly developed space between the facility and other uses. This space, a buffer zone, is one of the most important factors in siting onshore facilities. A buffer must be large enough to protect residents, workers, and transients from potential incidents created at the facility.

Although the resulting buffer zone is likely to be sized differently for different facilities, the process of determining an adequate minimum size for a buffer zone is similar whether the facility is a natural gas processing plant, an oil refinery, an oil processing facility, or a set of storage tanks at a pipeline junction.

A sufficient margin for error is an essential part of determining any buffer zone. For example, if a study calculates that the maximum potential radiant heat footprint for a particular facility is 900 feet, and the nearest homes are 1000 feet from the plant, the 100 foot difference is not likely to provide residents with a sufficient safety margin, or with a strong sense of safety.

Siting Considerations: Establishing as a primary criteria locating a facility away from residential, commercial, recreational, and unrelated industrial areas and from major public thoroughfares provides a basis for evaluating other issues such as habitat, cultural resource disturbance, and groundwater consumption. Facilities should be located near fire and emergency response stations having trained personnel and adequate equipment, or they should be located near the proposed site at the applicant's expense. Development of petroleum and natural gas resources must be balanced by the public's interest in not being unduly exposed to significant, avoidable dangers. County decisions should be based on assuring that the public's interest is protected.

Information disclosure followed by thorough review and sensitive decision-making can achieve a proper balance between an applicant's interest in development and the community's concern for compatible, proportional, and safe uses of the land. Careful evaluation of site selection, design, expansion potential, and impact mitigation can reduce or eliminate impacts. It can also produce the conclusion that a particular site is not acceptable for even a heavily mitigated facility.

A well designed, thoroughly mitigated project on a carefully selected site, assuming the project has acceptable parameters for future expansion and induced growth, could be acceptable to a community. On the other hand, not all projects are or ought to be approved. For example, facilities which emit significant amounts of pollutants to the air, even unavoidably, should not be sited. No facilities should be sited near to and upwind (prevailing direction) from nearby population centers.

Site selection must recognize both an applicant's technical concerns and a community's understandable reluctance to accept intrusive development. The applicant and the county should examine and maintain surrounding land for potentially inconsistent land uses over the life of a facility.

Complete mitigation is not always achievable. The likelihood of oil spills, fire and explosions can be reduced, exposure to risk can be minimized, and response capability can be maximized, but the possibility of these events cannot be eliminated. Nor can effects on tourism, recreation, or visual quality. The inability to completely mitigate should be a basic, acknowledged consideration in site selection.

Facility Consolidation: An important aspect of any onshore facilities proposal is the extent to which initial facilities may eventually be expanded or "built out". The number of platforms extracting fluids from an offshore field will often increase over time. Consequently, onshore facilities may be initially sized to handle smaller production than may ultimately be developed.

For example, an initial proposal for an oil processing facility with a 40,000 barrel a day capacity may be a precursor of expansion to 125,000 barrels per day. Similarly, a scenario for a gas processing plant with a 30 million cubic feet per day capacity may contemplate a second 30 million cubic foot increment and a third 65 million cubic foot increment later being added.

An oil processing plant and a gas processing plant located together may be designed differently than the two facilities if located apart. Common siting allows combining some waste treatment, product storage, generating, and other systems. County and state land use and coastal policies require an applicant to carefully consider consolidating existing and proposed facilities. Consolidation can minimize pipeline and traffic routes, less broadly affect overall area development, concentrate the need for response to emergency situations, and minimize regional exposure to actual and potential impacts associated with oil and gas development.

Reserves have been found on several leases off the county and are not always owned by the same operator. Given differences among hydrocarbon fluids and company processes, not all reserves may be easily served by common facilities. Consolidation allows concentrating impacts from several facilities, avoiding duplicate controls and minimizing regional disruption. On the other hand, consolidation may create a "hot spot" with unacceptable cumulative impacts.

Applicant and Governmental Considerations: Applicant's considerations in selecting sites for facilities will include, in addition to suitable physical characteristics, a determination that there are technically, legally and politically feasible means of accessing the site for pipeline, electric transmission and ground transportation. A piece of land on which a processing facility could be constructed to serve an offshore platform, but which is reachable by pipeline only over sheer cliffs, or which could be served by trucks only along mediocre roads passing through residential areas, is a less preferable site. An inappropriately designated site poses difficulty. Any site near a recreation area, a sensitive habitat, or a residential area can expect to encounter substantial political opposition.

A permitting body, in turn, will have a specific interest in proposals of any of the sorts described immediately above. The local governmental process involves political as well as legal considerations. The voices of constituents opposed to a project in a sensitive area may have their effect on the process. An application which proposes facilities in unlikely locations deserves special scrutiny in terms of site rationale, effects of construction, operational hazards, and alternatives.

Selection of Land: An applicant will likely seek land which is either appropriately designated or reasonably susceptible to an amendment. An applicant in this region can be expected to propose a processing facility site close to shore because the exceptionally heavy, viscous nature of northern Santa Maria basin crude makes it difficult to ship for any distance without removal of impurities. There is real potential that crudes may "set up," becoming more solid than fluid, if allowed to cool.

An applicant should seek sites with at least two overriding characteristics; sites which would not expose substantial numbers of residences, workers or transients to fire, explosion, or hydrogen sulfide (H₂S) in the event of accident, upset, or maintenance failure, and sites away and downwind from present and expected residential and commercial development. Locating a tank farm or co-generation facility would involve similar considerations.

Land Characteristics and Ownership: Another significant consideration for the applicant is land ownership or leaseholding. ("lease" here refers to surface rights rather than mineral rights.) Land already owned or leased by the applicant, by another oil company or partnership or land which can be readily purchased or leased for a long term is a necessity. The most likely course of action at present is for development to be proposed on land already owned by a petroleum company.

Staff has conducted a computer search of petroleum company ownership of lands in the coastal zone or in the valleys and mesas near the county's coast. Not all potential names under which the companies' land is held were available to staff. A more exhaustive search of ownership records in areas close to the county's coast was not feasible.

Figures VIII-3, 4, and 5 show the information obtained concerning petroleum company ownership as of fall, 1988, in lands reasonably close to the county's coast. With the exception of the Unocal Santa Maria Refinery tract, there is no indication that any of these parcels or any other parcels which may be held by petroleum companies have been specifically considered for siting onshore facilities.

The part of the county from Avila and Port San Luis south to the county line is the area most likely to be subject to offshore development under current lease sale conditions. Approximately six tracts are currently leased in nearby waters. Commercially viable finds have been made on nine tracts.

Physical and land use characteristics of particular parcels together with uses and characteristics of surrounding tracts are primary considerations in selecting sites. Currently, onshore support facilities can be sited only in industrially designated areas. The only industrially designated land in the coastal area south of Pismo Beach, Arroyo Grande, and Grover City lies on the Nipomo Mesa, either on or adjacent to the Unocal Santa Maria refinery tract. The refinery tract itself is dedicated exclusively to petroleum product and related uses. The adjacent industrial parcels are closer to residential development.

Careful site selection is imperative. Onshore facilities for one project were originally proposed for the Callender site, one of the tracts adjacent to the Santa Maria refinery. The proposal included a 40,000 barrel per day processing facility, a 280,000 barrel capacity tankfarm, and expansion to triple crude processing capacity, increase crude storage, and install a 125,000,000 cubic feet per day gas processing facility.

Figure VIII-3
Oil Company Land Ownership in the South County Planning Area

Figure VIII-4
Oil Company Land Ownership in the San Luis Bay Planning Area

Figure VIII-5
Oil Company Land Ownership in the Estero Planning Area

The site was proximate to a growing rural residential area and was located in a grove of flammable eucalyptus trees which reach nearby homes. The site was contiguous to a stretch of state highway characterized by sharp turns and limited visibility. There was no potential for a sufficient buffer zone. Nevertheless, the site was properly designated and the application was intensely pursued. Issues raised in the course of environmental review and sustained expressions of public concern persuaded the applicant to seek a different site.

The Santa Maria refinery is used for refining petroleum produced offshore. The only other areas identified in the South County sufficiently distant from residential development to permit contemplation of petroleum facilities are on prime agricultural land or are far from the coastal zone. Consequently, any major facility siting in this part of the county would most likely focus on the Santa Maria refinery.

South of Price Canyon and west of Highway 101, very little additional land could be considered for siting. East of Highway 101, east of Nipomo and the Five Cities area, there is land which, if rezoned, might not be attractive for oil processing because of distance from shore, but might be considered for gas processing, refining, or upgrading.

A producing onshore field sits in Price Canyon between Pismo Beach and the Edna Valley. From offshore, pipeline access to Price Canyon could prove difficult. Given Price Canyon's proximity to the increasingly residential/grape growing area of Edna Valley, air quality considerations would be problematic for onshore facilities. On the other hand, large relatively flat sites lie among the hills on the canyon's west side.

The large hills to the north and east of Pismo Beach are owned by oil companies. Pipelines currently run between the Unocal tank farm at Avila, the Price Canyon oil field, and the Unocal refinery. Expansion of these pipeline corridors may provide an applicant with a means of solving pipeline access problems to an otherwise desirable site.

Between Port San Luis and Montana de Oro State Park, the county's coast and upland topography become more rugged, while population concentrations decrease. Much of the coast could conceivably be reached by pipeline either from northerly tracts off San Luis Bay or from future lease sales in the northern Santa Maria Basin. Complications in this area include the proximity of the Diablo Canyon Nuclear Electric Generating Plant and PG&E's extensive land ownership. Transmission of airborne pollutants and the exposure of sensitive habitat to spill risks are also factors. The sensitive and increasingly recognized Morro Bay estuary, and the communities of Morro Bay, Los Osos and Baywood make onshore facility siting difficult north of Montana de Oro. The Montana de Oro and Atascadero State Beaches are held by State Parks. These prime recreation areas would be difficult to cross by pipeline. Significant habitat in this and other portions of the county's coastal regions are discussed in Chapter V, the biology chapter.

Between Morro Bay and Cayucos there is a strip of petroleum company land along Toro Creek. Chevron maintains pipelines and a tank farm serving multi-point mooring systems in Estero Bay. Vessels occasionally carry crude from the Chevron terminal around Point Buchon to the

Unocal pier at Port San Luis, as well as to other destinations. If offshore leasing and development occur near Toro Creek, the area may be considered for siting associated facilities.

North of Toro Creek, there are no active leases and no parcels designated as compatible with petroleum support facilities. Nevertheless, if offshore leasing followed by significant hydrocarbon finds occurs in this region, efforts to amend land use categories will likely follow. The land immediately north of Cayucos, between Cayucos and Point Estero is, because of present uses and land availability, perhaps as likely as any other to be considered for an onshore facility development.

8.7 Buffer Zones, Compliance, and Mitigation

A well-run, properly maintained facility should not expose the public to fires, explosions, toxic emissions, or persistent odors. Nevertheless, human error, unexpected events, and equipment wear do occur, and upsets sometimes result. Site selection which avoids exposing local residents and visitors to upsets is an important aspect of planning for onshore facilities supporting offshore development.

Buffer Zones: The size of a buffer zone should be central in influencing the choice and review of a site. A buffer zone sufficient to protect against fire, explosion, to lessen the effect of odors and emissions, to reduce visual and noise impacts to acceptable levels, and to ensure compatibility with surrounding land uses should be mandatory. Proximity to services such as electricity, fire and emergency services, and adequate, safe transportation routes are necessary. An adequate separation from incompatible land uses, such as residential areas, biologically sensitive areas, and prime agricultural lands should be required. Maintenance of the separation should continue over the life of the project. A proposal's potential to induce secondary growth should be considered. A tract large enough for anticipated expansion should be sought.

Defining a buffer zone should involve an interdisciplinary study. Acceptable separation from residential areas and maximum radius of exposure to radiant heat from a fire, to debris from an explosion, or to other hazards will vary with facility size and operations conducted. A buffer zone should include enough distance from other uses to allow dissipation of odors occurring under normal operation circumstances.

To determine a safe perimeter, footprints for different accident types should be calculated and overlaid. Typical hazard footprints include ignition of a large product spill and radiant heat and flying debris from a boiling liquid vapor explosion. Other events include H₂S releases and various fires and explosions. The various hazard and odor footprints and the proximity of residences or significant numbers of transients, especially those reasonably expecting a different viewscape than heavy industry, should be specific factors in determining buffer size.

A buffer of sufficient size can protect an ongoing petroleum use from a challenge that it has become a nuisance. Land uses change in type and intensity over time. An area sparsely

populated when a plant is sited may become gradually developed with residences as years pass. Though a plant may precede residential development, it may become an unacceptable irritant to residential or other uses. A buffer zone which ensures compatible nearby uses on a long-term basis can minimize the difficulty.

In summary, a site should be buffered to protect other uses, activities, resources, and aesthetic sensibilities, to keep people from being exposed to hazards, and to promote the long-term viability of any approved petroleum use. The size of a buffer will vary from project to project. A site which does not offer an adequate buffer for all identified hazards and compatibility of long-term uses should not be designated for the use.

Proximity to Public Fire Response: An applicant should be expected to install state-of-the-art pressure relief, monitoring, fire prevention, detection, and suppression equipment and to have thoroughly trained personnel at its facility to respond to fires, explosions or similar events. Nevertheless, because of the possibility of explosions, the size and intensity of blazes, the potential for off-site effects, and the difficulty of suppressing such fires, it is essential that quick response capability from the California Department of Forestry or other responding agency be available.

A facility should be located within a brief (the current standard is five minutes) response time from an adequately equipped and staffed CDF fire station. Alternately, the applicant should bear the cost of equipping and initially operating a new, nearby, adequately equipped CDF station. Also, well-drawn mutual aid pacts need to be in place for fires, explosions, and other events at facilities and along transportation routes.

Other Construction and Operation Mitigations: Possible mitigations for many potential impacts must be developed after review of specific proposals. This section does not present a comprehensive discussion of mitigations. Nevertheless, the following should be considered:

- Paying locally prevailing wages to construction workers can significantly reduce incentives for in-migration and can thereby lessen any adverse consequences of in-migration.
- Any storage tanks have to be bermed with impervious lining and with sufficient capacity to hold the contents of tanks in the berm with an allowance for rainfall. Berms should be graded to run to drain pumps.
- Sanitary wastes and runoff from process and storage areas would be generated. The former can be handled by either community sewer or septic tank and leach field systems. The latter requires installation of a system for separating rainfall from spilled hydrocarbons before discharge from the site.

- Heat-and-pump stations should not be located in residential, recreational, commercial, or other areas subject to large concentrations of people, and should not be sited in sensitive habitat. Appropriate buffer zones should be defined according to the methodology described above. Emissions to air and water from heat-and-pump stations should be analyzed. Stations should ordinarily be powered by electricity.

Transportation Routes: Access to services and transportation routes present problems for both applicant and county governments. Transportation routes are an essential siting issue. Gas processing plants produce large volumes of hazardous materials. Some cannot easily be shipped by pipeline. Refineries, upgraders, and other facilities also require movement of significant quantities of hazardous materials. Sites which induce transportation of these materials onto high risk (because of population exposure or roadway characteristics) roads or railroads should be avoided. Projects seeking rail shipment should be close enough to rail terminals to avoid intermediate truck movements. Any site which does not have adequate or cannot provide road or rail routes, especially a refinery, upgrader, or processing facility site, should be rejected.

Pipeline Routing: During normal operations, pipelines are arguably the safest, most innocuous and least costly means of transporting petroleum or natural gas. Greater hazards are posed by vessel, rail or tanker truck movement of various commodities produced by offshore development. County policy strongly favors transportation of crude and products by onshore pipeline. Many petroleum operators disagree with the county policy.

Many pipeline and transmission route mitigations are straightforward. Careful route selection, as opposed to straight lines between origins and destinations, can avoid or reduce impacts by increasing distance from sensitive receptors.

Pipelines can be laid in most terrestrial topography. Non-liquefiable soil is preferable either to rock or to soil subject to liquefaction. Gentle topography is better than sharp elevation changes; sensitive habitat and archaeological sites are to be avoided. Pipelines or electric cable running to a platform should be buried at the shoreline to a depth where erosion and wave action pose no threat to line integrity.

Pipelines should be sited to minimize the chance that spills will reach sensitive resources and the amount of construction disturbance in residential areas and near public facilities. Gas pipelines should avoid residential areas and, where possible, major transportation routes. Jacketed pipe where lines may be exposed to stress, cathodic protection, and frequent, regular visual inspections of a route are appropriate protective measures, as are operational techniques such as dehydration, inhibition, and pigging. Periodic barriers or baffles on sloped lines can slow or prevent the migration of fluids through filled soils in the pipeline trench. State-of-the-art leak detection systems, appropriately located valves and integrated, centralized operation can help limit the size and impact of spills and releases. Properly operated leak detection systems can quickly inform pipeline operators of large liquid spills. Small leaks may remain unnoticed for a considerable length of time, until there is an observable hydrocarbon

pool, detectable groundwater contamination, or ignition. Currently, leak detection technology for natural gas pipelines is primitive. A properly drawn and implemented containment and response plan can lessen impacts.

A potential operational impact from one type of pipeline presents a problem of a different order. Northern Santa Maria basin gas as produced from the reservoir can be expected to be "sour," that is to have a high hydrogen sulfide content. Hydrogen sulfide is odorless and extremely toxic at high concentrations and may not be removable offshore. Separation of large quantities of hydrogen sulfide in a confined area such as a platform and the problem of disposing of massive amounts of sulfur are extremely difficult propositions. Consequently, a company needing to process reservoir gas for sale, or use it for co-generation, will likely bring sour gas ashore. The characteristics of hydrogen sulfide at high concentrations make a release an extreme hazard for human health and safety.

In siting gas lines, it is essential that population and transportation centers be avoided where possible. It is desirable that sweetening and processing of natural gas be conducted in an isolated, unpopulated area. Bringing natural gas ashore also requires that regulatory bodies have a precise understanding of characteristics of the gas and of measures necessary to control toxicity, flammability, and explosiveness.

Electric Transmission Line Routing: Considerations in siting electric transmission lines are not substantially different for offshore oil projects than for other circumstances. Towers should be spaced to minimize visual impact. For the same reason, the least visually intrusive tower configurations should be selected. Routes should avoid profiling towers and transmission lines against the sky. Residential and other land use which concentrate populations should be avoided because of potential health concerns.

Pipeline and Electrical Transmission Line Construction Mitigations: Not all pipeline construction impacts can be completely mitigated except by avoidance of sensitive receptors, i.e., rerouting. Construction noise cannot be completely baffled, generated dust cannot all be subdued. Only avoidance of populated areas can minimize certain construction impacts. Similarly, the potential for impact to sensitive habitat or to an archaeological site can be completely resolved only by rerouting. Pipeline construction may alter landscapes and surface and near-surface flow patterns in land with undulating topography. Steep slopes, dunes, and land prone to sliding or slumping should be avoided where possible. Stream crossings should be avoided or selected to decrease proximity to nearby and downstream sensitive habitat. Fuel depots should be defined, bermed, removed from sensitive habitat, impermeable during construction, infrequent, and the only locations for normal refueling. This holds for all fuel depots associated with a project. Existing transmission corridors should be utilized wherever appropriate.

The effect of constructing transmission lines to serve a project must be evaluated along with other environmental considerations. Electric substations are normally a part of such a project.

Environmental considerations associated with transmission lines include visual impacts and the unresolved issues regarding health impacts.

Pipeline Operating Mitigations: Pipelines require pump stations to operate. Pumps normally operate continuously and oil line pumps may operate noisily. Noise impacts can be mitigated by buffering or by enclosure. Pump station noises may be the only significant impact from normal pipeline operations.

The possibility of operational upsets, such as spills, fires, explosions and toxic releases exists. These events can occur, sometimes with devastating impact, at pump stations, compressors, or points along a pipeline route. Spills and gas releases from pipelines can result from clean line breaks, major ruptures, or small cracks or holes.

8.8 Summary

Proposals for onshore facilities to support offshore development are likely to continue because commercially viable offshore oil and gas reserves exist on several offshore leases. Continued exploration may locate additional offshore reserves. Additional lease sales may occur offshore San Luis Obispo County.

The present county land use and coastal zone land use programs try to provide for all reasonably anticipated uses by including the uses in designated zoning classifications set forth in the county's ordinances and land use element ("Table O"). Onshore support facilities, classified as petroleum refining and related uses, can be generally permitted on industrially designated parcels after specific plan approval. The county will not likely be asked to site a great number of these facilities.

The heavy industry discussed in this chapter is not paralleled by any other business moving into the county. A company's decision to proceed with a particular project and to propose a specific facility will become a significant land use and planning issue for the county. A facility proposal will be driven to a great extent by factors outside the physical limits of the county, and outside the county's frame of reference. A partial list of such factors is:

- Reservoir location and size and quality of reserves.
- Gravity and viscosity of crude.
- Impurities in crude, natural gas and other recoverable fluids.
- Water depth.
- Ability to retain heat in emulsions moving to shore.
- Interest in nearby developable leases.
- Economics of processing, refining, and transportation alternatives.
- Refineries and markets available to the particular company.
- Leasing and development policies.
- Political climate.

What type of facility a particular company will need to develop offshore reserves, how large a facility may be required, and where a facility can feasibly be located, given problems with heavy crude, sour gas, and the sensitive nature of the rural environment, are factors which contain tremendous variables in terms of compatibility with other uses. Additionally, at the early stages of field development, an applicant's knowledge of reservoir characteristics and future needs may be too incomplete to provide more than a limited assessment of the onshore facilities required to effect full economic development of the field.

The county needs to understand and be able to deal effectively with an applicant's long term intentions for development before it can determine the appropriateness of a land use proposal. Given the variety in size and type of facilities, it cannot be said that any or all of the industrially zoned parcels in the county are suited for the range of petroleum development which may occur.

Refineries, crude oil and gas processing plants, upgrading facilities, and tank farms present a range of potential impacts to human health and safety, to habitat, and biological communities, and to a range of other resources including air and water quality, the serenity and visual character of the county, the transportation infrastructure and the course of growth. Many impacts or potential hazards can reach well beyond the boundaries of any individual parcel.

Studying the county's physical circumstances and regulatory structure, its population and growth patterns, and the nature of the pressure to pursue petroleum development results in general recommendations and a number of specific recommendations which would change county planning and permitting for onshore facilities supporting onshore and offshore oil and gas development.

8.9 General Policies

1. Redesignating Petroleum Refining, Marine Terminals, Piers and Related Uses

A specific plan is required prior to establishing these types of uses. This procedure should be established whereby a company which has ascertained a need for onshore facilities to support petroleum or natural gas development. The procedure should apply to all refining, processing, storage, or co-generation facilities processing hydrocarbons produced onshore or offshore, except for facilities limited to in-field processing of hydrocarbons produced from the field surrounding the facility.

The specific plan proposal would in effect be a statement of intent to use industrial land in the county for potentially hazardous, tightly integrated, physically complex heavy industry engaged in large-scale, energy-intensive handling of a range of hazardous materials. Hydrocarbons could come from producing fields inside or outside the county. The burden of establishing the plan should be on the applicant, because selection of a site and design of facilities can produce tremendous variance in the scope and type of impacts, and can have a pervasive effect on the character of a region. An applicant's existing right to seek redesignation of a parcel to industrial

would not be affected. An application should discuss general compatibility of the proposed use with characteristics of the parcel, with surrounding uses, and with regional considerations.

A specific plan application should reflect the overall plans of the proponent and any partners or other operators in fields expected to send production to the facility site. It should discuss long-term plans for using the site, including but not limited to:

- Characteristics, volumes, and sources of hydrocarbons
- Expected incoming and outgoing transmission routes
- Size, type and location on site of initial and subsequent refining, processing, co-generation, storage, transmission, and associated facilities
- Timing for initial and later phases of site development
- Volume and timing of required ancillary resources such as water and electricity
- Volume and nature of hazardous materials required or produced
- Transportation routes
- A discussion of the extent to which the characteristics and configuration of intended facilities and operations will be compatible over time with surrounding uses and regional characteristics.

This process should help to focus an applicant's planning efforts not only on maximizing facility efficiency, but on the long-term compatibility of interactions between the intended use and the surrounding region. A properly drawn plan would also focus the county on assessing the compatibility of a proposal with the intensity of surrounding uses and on the adequacy of separation of potential hazards from sensitive receptors. It would further encourage the county to make comprehensive land use decisions which minimize effects on the public and resources of a region from heavy industrial facilities, and also protect facilities from encroachment over time by incompatible surrounding uses. Encroachment might otherwise cause facilities to be regarded as nuisances in the future.

2. Pre-operational Compliance and Systems Review

The second general recommendation, based on the complexity of these projects and the need to insure that terms of their construction and operation are observed, is that, for petroleum refining and related uses, the county's condition compliance procedures be enhanced. Specifically, two procedures for newly constructed or modified facilities, a pre-operational compliance review and a systems safety review committee, should be studied, adapted to local circumstances, and put in place. Pre-operational compliance review addresses the reality that

approval of a plan for any of the facilities constructed in this chapter can be expected only if a large number of conditions intended to protect people, habitat, resources, and community are placed on the approval. The San Luis Obispo County Board of Supervisors placed well over 300 conditions on the San Miguel Project.

Certain conditions may prove complex in application; others may require the passage of time, expert opinion, or another agency's participation. Many conditions will be critical to the compatibility of a facility with its surroundings. County scrutiny of projects should include post-construction review, with approval by the Board of Supervisors of compliance with all pre-operational conditions and of readiness to comply with operational conditions. Permission to operate a facility should be given only when a satisfactory demonstration of compliance has been made.

Another consequence of the multiplicity and complexity of conditions is that many inspections, studies, decisions, and technical adjustments will need to be made by county staff. Consultants may be hired, and direction to the applicant may be needed. As part of compliance review, the county should publicly create a systems safety review committee composed of management-level representatives of agencies such as planning, engineering, environmental health, and the APCD to integrate and guide the day-to-day monitoring of condition and ordinance compliance. The committee should have power to make decisions and approvals and give guidance within the framework of approved conditions, subject to the Board's ultimate power to determine compliance. The committee should exercise the county's powers to initiate studies, hire consultants, and halt or modify work, subject to the Board's ultimate responsibility. Its operation should be funded by the project proponent.

8.10 Specific Policies

Specific policies stated below are policy guidelines and are not intended as a comprehensive statement of conditions to be imposed on individual projects. The policies include:

1. Buffer zones shall be based on analysis recognizing maximum hazard footprints with a margin for safety, air pollutant and odor emissions, prevailing winds, noise, and viewsheds, incompatible uses, and long-term regional trends.
2. Facilities should be sited in swales or other natural depressions and should not be profiled against horizons.
3. Facilities shall be sited within five minutes response time of an adequately staffed and equipped fire/emergency response station.
4. Industry shall maximize employment opportunities for local residents to reduce impacts from the influx of out-of-area temporary employees.
5. Natural gas pipelines shall be sited away from population concentrations where possible.

6. Non-pipeline construction and development near residential areas shall be prohibited.
7. Facilities shall have state-of-the-art pressure relief, monitoring, and fire prevention, detection, and suppression devices.
8. Facilities shall be consolidated where possible unless cumulative impacts from consolidation produce an unacceptable "hot spot".
9. That conditions for specific onshore facilities be developed on a case by case basis, taking into consideration the type of facility proposed, proximity to population, environmental constraints of the site, the potential for upset, the facilities hazard footprint, and the cumulative impacts over the life of the facility.

CHAPTER IX: SUPPLY AND CREW BASES

9.1 Introduction

A general description of supply and crew bases and marine terminals is provided in chapter II. This chapter will provide a more detailed look at these facilities, the general circumstances of siting such facilities on the central coast, a summary of impacts, and recommendations related to such facilities. Information related to the physical size, resource needs, and logistical characteristics will also be presented. Supply bases will be discussed in the first part of the chapter. Crew bases will be presented in the second half of the chapter.

Permit authority for a supply or crew base is held by several agencies. The Coastal Commission has approved the Local Coastal Programs prepared by the county, and the City's of Morro Bay, Pismo Beach, and Grover City. In areas above the high tide line the county's Local Coastal Plan has authority. The Port San Luis Harbor District and Coastal Commission have permit authority regarding portions of a supply or crew base below the high tide line. An applicant is encouraged to coordinate with all of the involved agencies to fully understand the permitting process.

The county's Local Coastal Program (LCP) describes a service and/or supply base (the terms service and supply are synonymous for this documents purposes) as logistical links that are used to transfer materials and workers between shore and offshore operations. A supply base generally includes berthage for supply and crew boats, dock space for loading and unloading, warehouses, open storage areas, and space to house supervisory and communication personnel. The LCP Framework for Planning policies further define these facilities into **major** and **minor**. A major base would transfer heavy equipment and large amounts of supplies using large supply boats that many times have a length of 180 feet or more. A minor base is defined as a small supply, crew ship base that uses crew boats up to 80 feet in length. Figure IX-2 shows typical supply and crew boats. The Land Use Element portion of the LCP provides further description of a minor crew base in the San Luis Bay Planning Area standards. In that section, it limits crew bases to handling only light supplies that are characterized as being incidental items, consisting only of small packages that can be carried on by hand. When applied to a project, planning area standards are given a higher priority than general policies in the LCP. The Local Coastal Plan contains other more detailed policies and standards that would apply to a supply base or crew base proposed in San Luis Obispo County.

The supply and crew bases currently serving the Santa Barbara Channel and the southern Santa Maria Basin are located in Ventura and Santa Barbara Counties. Figure IX-1 shows the locations of existing supply and crew bases. If oil and gas development in the northern Santa Maria Basin continues, a support facility may be proposed in the central coast area.

Figure IX-1
Supply and Crew Bases serving the Santa Maria Basin

9.2 Supply Base - General Characteristics

Offshore oil and gas development activities require onshore support from supply bases which serve as transfer points for construction materials, heavy equipment, supplies, and personnel. A supply base can function as a crew base as well. Personnel, materials and heavy equipment are transported to the platforms via supply and crew boats. Helicopters are sometimes used to transport light equipment and personnel. Helipads are sometimes proposed as part of a supply or crew base. The Lompoc and Santa Maria airports currently provide this type of support for offshore oil and gas activities in the southern Santa Maria Basin. Supply bases are normally operational 24 hours a day, 7 days a week.

A supply base would typically include berthage for supply and crew boats, dock space for loading and unloading of equipment and materials, warehousing and open storage areas, possibly a helipad, space for temporarily housing personnel, and parking. The physical size of a supply base depends on the scope of oil and gas activities in a particular area, land availability, infrastructure, and surrounding land uses. It should also be noted that a supply base can be configured using offsite storage, offices, and remote areas for staging (loading and unloading of materials), parking and other associated activities. Table IX-1 provides estimates of needed resources related to the different phases oil and gas activities. It should be noted that the existing ports in San Luis Obispo County do not have the physical attributes necessary for a supply base to operate. Also, the Energy and Industrial Development policy of the LCP Framework for Planning states that:

Policy 29 **SERVICE BASE LIMITATION.** Service bases shall be concentrated to a single facility and site and shall be further limited, where possible, to minor service bases. All heavy equipment and large quantities of bulky supplies should be transported from existing deep water ports or any proposed oil supply base in the northern Santa Barbara Channel. [This policy shall be implemented as a standard.]

Table IX-A provides estimates of needed resources related to the different phases of oil and gas activities. These are estimates only, the actual amount required may vary depending on the intensity of the activities and manner in which a particular company completes development. Development on the West Coast is completed in a different fashion when compared to other parts of the country. The reasons for the differences include:

- *The use of coastal resources for other activities;*
- *Oceanographic conditions are a factor in how base activities are done;*
- *Local land use policies may preclude development of supply and crew base facilities;*

Figure IX-2
Supply and Crew Boats

- *Industry ordering and delivery practices may reduce the size and amount of resources needed. Also, helicopters would be the preferred mode of transportation of personnel to platforms in the Santa Maria Basin.*

**Table IX-1
Resource Estimates for a Supply Base**

Facility Requirement	Exploratory Drilling	Development Drilling	Production
Land (On & off site)	5-10 acres *	25-50 acres ***	25-50 acres ***
Wharf Space	200-400 feet **	400-800 feet**	400-800 feet**
Water (potable)	.53 acre ft per * 10,000 ft oil well	.36 acre ft per * 10,000 ft oil well	38 gal per person per day *
Water (non-potable)	1.43 acre ft per * 10,000 ft oil well	1.45 acre ft per * 10,000 ft oil well	Not Avail.
Waste Disposal	110 lbs per day *	233 lbs per day *	112 lbs per day *
Sources: * MMS California Factbook, 1985. ** NERBC OCS Factbook, 1976. *** Both.			

9.3 Size/Land Requirements

During the different phases of offshore oil and gas activities, the supply base can be expected to vary in size. During exploration activities, a smaller scale base is needed than during the construction, development and production phases. The latter activities will require a larger scale supply base capable of transporting and storing increased amounts of equipment and supplies.

A typical supply base might require 25 to 50 acres of preferably flat, waterfront property for staging and storage. Figure IX-3 is an example of a well designed supply base. The acreage used for staging and storage purposes only could be proposed for a location at an inland site. The land would be used for loading and unloading of equipment, warehouses, silos, storage tanks and open storage. A long term base should be located in an all-weather harbor in order to avoid transportation delays due to bad weather. The amount of land necessary for a permanent supply base would depend on the number of platforms and rigs being serviced, and the variety of offshore oil and gas activities being supported. It should be noted that if large amounts of acreage are not available, the industry will try to coordinate deliveries so that the supply boat can load up and leave the same day. This would avoid having to store large quantities of materials.

Figure IX-3
Prototype Supply Base

The Petroleum Transportation Committee of Santa Barbara County's Resource Management Department stated that a minimum of 25 acres is necessary for a supply base. A supply base was proposed in Gaviota which included 27 acres of land. The proposed Cojo supply base was to utilize 24 acres. The MMS 1985 Factbook indicates that a supply base would require between 27 and 35 acres. At Port Manatee, Florida ten acres were used to support two exploratory drilling rigs operated by different oil companies. In another study completed by Alaska Consultants, Inc., it estimates that a minimum of 3.5 acres of waterfront property is required for one berth and related support facilities for a single exploration rig. The study indicates that five acres would be a more likely land requirement.

Exploratory: Supply bases used to support exploratory activities differ from bases that would service construction, development, or production phases of offshore activities. During this phase of development, the base would typically be smaller in scope. Drilling muds, cement, pipe, personnel, tools, small amounts of explosives and wellheads are some of the items that would be transported.

Construction: During the construction phase of development when fixed platforms and pipelines are installed, supply base activities would focus on storing and moving large equipment and bulky materials. These materials would be related to platform installation, pipe laying, storage of anchors, anchor chain or cable, buoys, and other similar marine construction equipment. Also stored would be food, fuel, pipe, and water for boats and barges.

During the construction phase of a typical project in the Santa Maria Basin various types of support vessels would be used. Seagoing tugs, barges, and heavy transport vessels would be used to transport the platform jacket piling, the production and drilling modules and drilling rigs. Several vessels could be expected to remain in the area on standby during construction.

Development: The development drilling phase requires land space similar in size to the construction phase. Development drilling does not require storage for mooring systems and other marine materials required during the first two phases. Materials needed to drill a development well include: pipes, tubular goods, muds, water, cement, bits, fuel, and wellheads (1 per well).

9.4 Waterfront/Harbor

A supply base should have berths in a protected harbor with adequate space for maneuvering. Supply boats typically have a draft of 13 to 18 feet. A minimum channel depth of 15 feet would be required at all tides. Approximately 225 to 250 feet of dockside space is generally required for each 200 foot supply boat. An efficient supply base should be able to load and unload numerous vessels at the same time. The use of supply boats may necessitate dredging the harbor because bow thrusters in the boats sometimes cause scouring and silting. This can lead to build up of sand and silt which creates shallow water in which the vessels cannot navigate.

In order to avoid conflicts with fishing and recreational users of a harbor, consideration must be given to the amount of space available within a harbor for a supply boat to maneuver and pass through the channels to dock. This is an important factor because supply and crew boats make frequent trips and are large vessels that require greater space to maneuver than smaller recreational and commercial fishing boats. Designating vessel traffic lanes, especially at the harbors entrance where fishing gear is sometimes placed, is one example of how conflicts can be reduced. In Santa Barbara County the Fisheries/Industry Liaison Office has been used to mediate conflicts.

A sheltered harbor that is near offshore leases is a major consideration in the selection of a supply base site. The harbor must permit the loading and sheltering of supply vessels even though there may be rough seas offshore. Neither Port San Luis or Morro Bay are considered to be fully protected harbors. Policy 32 of the LCP Framework for Planning states:

No service base shall be sited in areas north of Point San Luis due to distance from leasing areas and their high environmental sensitivity of the area unless substantial leasing has been permitted in the northern portion of the county and it is demonstrated that: 1) the alternative sites are infeasible or more environmentally damaging, and 2) adverse environmental impacts are mitigated to the maximum extent feasible.

The efficiency of a supply base is largely judged by the amount of turn-around time required for each trip. Ideally, a base would be located so that boats could move as freely as possible to and from their berthing and loading areas. It would be desirable that a supply base be segregated from other uses in order to avoid operations conflicts, congestion, and delays.

Staging Areas: The apron is the principal staging area for supply boats and is used for the loading and unloading of supplies and equipment. The apron extends from the supply boat berth, back to the warehouse and storage facilities. The staging area should be capable of supporting heavy loads which would be lifted by large cranes onto boats. A large apron allows for the assembly of pipes, containers and other items, before the supplies are lifted onto a supply vessel. An ideal apron would be 100 feet wide, but this is not always feasible.

Warehousing: A warehouse is necessary to store a variety of materials. Tools, powdered commodities such as dry drilling mud and cement, food, and other supplies need shelter from the weather. The size of the warehouse will depend generally on the intensity of offshore development and the amount of available waterfront space.

Open Storage: Land that is flat and can support heavy loads of casing, pipes and other heavy materials is needed for a supply base. The open area is used for storing pipe, equipment, drill rigs and other large scale supplies, materials and equipment. This open space area should be adjacent to the base. The open space storage area could be located elsewhere, but adequate transportation facilities must exist and traffic impacts must be mitigated.

Fueling Facilities: Most bases will have their own fuel storage tanks for serving the needs of supply boats and the offshore rigs. If fuel storage tanks are on the base, they should be in a remote area. The amount of fuel stored will depend on how many platforms are served, the availability of storage, what phase of development they are in, and the number of trips made by support vessels.

It is estimated during development drilling approximately half million gallons of fuel per year are needed for the transportation of materials and personnel to and from one offshore platform drilling four 15,000 foot wells. Fuel is used by supply and crew boats used to transport materials and personnel. These boats may have on-board generators that use fuel to produce electricity. The electricity is used to power pumps that transfer materials (muds, cement, water, etc.) from on-board tanks to the platform. If not fully electrified, a platform uses fossil fuels to generate electricity. It is likely, because of new air quality regulations, that platforms will be required to be fully electrified. A platform may use diesel powered turbines during start-up operations and switch to electrically powered turbines.

Mud and Cement Supplying Facilities: Bulk dry drilling mud and cement are stored in silos which are typically located just off the apron or staging area of the dock. These materials are blown into storage tanks on board the supply boats. This blowing process is done using compressors and has limitations as to how far away the silos can be positioned from the dockside. Typically 100 feet is the maximum distance a silo can be from dockside. Drilling mud, cement, and other fillers can also be transported in sacks.

Mobile Equipment: Cranes and forklifts are used to load and unload supplies. The cranes are used for loading and unloading activities and for moving materials in the open storage areas. Different sizes of moving equipment will be used depending on what stage of offshore activity is occurring.

Water Facilities: Large quantities of potable and non-potable water are transported from a supply base. It may be necessary, depending on water availability, to construct a desalinization plant or other means of providing the necessary amounts of potable water. Also, water storage and pumping facilities may be needed. Demands for potable and non-potable water can vary depending on the availability of desalinization units on a platform.

9.5 Materials to be Transported

A supply base would be used to transport a variety of goods to platforms. Table IX-2 summarizes some of the items and estimates the amounts that could be shipped. The largest demand for materials and equipment is during the exploratory and development drilling stages. It is estimated that one 10,000 foot deep exploratory oil well needs 2.7 million pounds (1,352 tons) of materials. Drilling a 10,000 foot development well needs slightly less material, 2.65 million pounds (1,328 tons). This is a representative sample, the actual number could be more or less. Items appearing more than once are used in different amounts during the various phases of development.

Materials from the Platform: Transportation of goods and services from the shore to the drill rigs or platforms is the major activity. Personnel are returned from the drill rig to the shore. Parts that needed onshore repair also come back to shore. Solid and hazardous wastes are returned to shore and are required to be disposed of in an appropriate manner. At Port Hueneme, solid waste is picked up by the City of Port Hueneme and taken to the local landfill. Hazardous materials are disposed of using private contractors. Future regulations may require operators to dispose of more wastes on shore. Industry is required by law to use an inventory monitoring system that tags and labels items transported to and from the platform.

9.6 Crew Bases - General Characteristics

A crew base is a shore based facility which supports the exploration, development and production activities related to offshore energy development. Crew bases are used to transport personnel, light equipment and supplies to and from offshore operations. As previously discussed, crew base activities can be a function of a supply base. This section of the chapter will focus on the functions, spatial requirements, and characteristics of the crew base.

Light supplies and equipment may also be transported from a crew base. Typically, crew bases do serve as light supply bases, which can provide for the transport of such limited commodities such as food, water, some dry mud and cement and light equipment. Such supplies would weigh less than 500 pounds individually and could weigh up to 1500-2000 pounds per trip. The county's Local Coastal Plan for the San Luis Bay planning area currently limits the supplies that can be transferred from a crew base to items that can be carried on by hand. In the Santa Maria Basin, the industry would prefer to use helicopters instead of crew boats to transport crew and light supplies because of the rough offshore sea conditions.

A base serving the Santa Maria Basin from San Luis Obispo County could be expected to operate 24 hours a day, 7 days a week. The base would probably consist of 2 to 6 crew boat berths. The crew boats could range from 65 feet in length to 115 feet long with an average draft of 6 to 10 feet. At a minimum, a crew base typically includes a pier with berthing spaces, mooring buoys, an office, a personnel waiting lounge, and parking lot.

These facilities are much smaller in scale when compared to a supply base. Currently, the Carpinteria and Ellwood piers along with Ventura harbor are used for transferring light supplies and crew. The Gaviota and Goleta piers are also used for light supplies and crew on a temporary emergency basis with prior approval from state and local agencies. A typical crew base is located in Santa Barbara County at Carpinteria. The facility consists of a pier and a 2.5 ton capacity hydraulic crane. A higher capacity crane (75 ton) is available on the pier to load heavier supplies on crew boats.

9.7 Westec Crew Base Siting Study

This study was completed in 1984 and focused on identifying and evaluating sites for locating a new, long-term crew base in Santa Barbara or San Luis Obispo County. The study area was from Point Estero south to 3 miles east of Point Arguello. The study included three major tasks:

Table IX-2

Examples of Goods Transferred from a Supply Base per 10,000 foot well

Item/Good	Unit	Exploration	Development	Production
Drill Bits	.466 bits/day	X	X	
Bleach	30 gal/well	X	X	X
Cement (1)	5,561 sacks/well	X		
Cement (2)	3,652 sacks/well		X	
Detergent	110 lbs/well	X	X	X
Diesel (1)	4,494 gal/drill day	X		
Diesel (2)	1,260 gal/drill day		X	
Diesel (3)	210 gal/well/per			X
Food	variable	X	X	X
Linen	variable	X	X	X
Lube Oil	42 gal/drill day	X	X	
Electrical	variable			X
Mud	216 sacks/drill day	X	X	
Paint	500 gal/well	X	X	X
Rope	variable	X	X	
Sand	20,000 lbs/well	X		
Tubular	7,800 lbs/drill day	X	X	
Wellheads	1/well	X	X	
Water-Drill	variable	X	X	
Potable Water	variable	X	X	X

Source: Facilities related to Offshore California: A Factbook. MMS study, 1985.

1. *Screening of the study region and candidate site identification;*
2. *Evaluation of the candidate sites;*
3. *Preparation of the final report on tasks 1 and 2.*

Of the study area, 90 percent of it was disqualified as a potential site because of physical oceanographic conditions, impacts on biological resources and restrictive land uses. Three final candidate sites were identified, all of them in San Luis Obispo County. They included:

1. *Morro Bay Harbor near Coleman Park;*
2. *Port San Luis Harbor South west of Harford Pier*
3. *Union Oil Pier in Port San Luis Harbor*

Even though these sites were selected as candidates none of the locations were acceptable when compared to the assumptions used to complete the study.

The results of the Westec study indicated that Morro Bay Harbor was not suitable. This was primarily because of the land use regulations in the City of Morro Bay's Coastal Land Use Plan.

The 1984 study also found that building a facility in Port San Luis Harbor southwest of Harford Pier posed serious conflicts with current land use designation and the Harbor Master Plan. The conclusion was that this site was "was not the most suitable location" for a crew base.

Although the study found that the Union oil pier at Port San Luis was "a suitable location" compared to the three other sites considered, the pier does not meet a number of the assumptions upon which the study was based. Those assumptions are listed below. Also, the study may or may not be true today because circumstances in the county and the industry have changed since 1984. However, the study does provide site specific information and characteristics of a crew base that are useful in considering them. In preparing the study, the base was assumed to have the following characteristics:

Westec Study - 1984
Assumptions for an Operational Crew Base

1. *base would be operational 92% of the time, closing 2 days in every 25;*
2. *maximum hours of continuous down time would be 48 hours;*
3. *the base would be operational 24 hours a day;*
4. *the maximum acceptable wave height is five feet; **
5. *crew boat berths would be a minimum of 2 and a maximum of 6;*
6. *water depth of 9 foot is the minimum required;*
7. *crew boat size: a maximum length of 115 feet, an average of 80 feet, a draft of 7 ft;*
8. *a pier length of 300-700 feet and 30 feet wide;*
9. *deck cargo of 2 tons maximum per boat trip: drilling equipment, valves, food, etc;*
10. *a pier crane; 2 ton jib crane;*
11. *potable water storage in boats. 600 gallons loaded by hose;*

12. *crew boat trip maximum of 25 trips per day and 3-4 trips per peak hour;*
13. *crew personnel passing through the base; 400 people per day - 32 people per trip;*
14. *parking spaces 200 auto, 2 bus loading areas;*
15. *remote parking and shuttle bus program;*
16. *a warehouse 30 x 30 x 12 feet high, with fork lifts;*
17. *an office 30 x 30 feet;*
18. *a 20 x 30 foot personnel waiting lounge;*
19. *helipad if land is available, 80 x 80 foot;*
20. *potable water needs for crew base estimated to be 5,000 gallons per day;*
21. *onshore base area, if land is available, .5 to 4 acres;*
22. *dredging of channel and berth area will be needed;*
23. *breakwater may be needed, 2,500 feet in 30 feet of water.*

In reviewing oceanographic data, the study also found that the central coast area had very high wave energy levels. In 1983 the Union Oil Pier was subjected to 25 foot high waves and was totally destroyed. In Morro Bay during the 1983 winter storms, the entrance was closed for 30 consecutive days.

9.8 Impacts from Supply and Crew Bases

The following is a summary of potential impacts that may be caused by supply and crew bases. It should be noted that the impacts of a crew base would generally be significantly less than a supply base. Several factors should be considered regarding the intensity of use that would result in impacts:

1. *other existing harbor uses;*
2. *the daily number of personnel passing through a base;*
3. *the daily and monthly tonnage of supplies and materials being transported;*
4. *the number of daily trips by vehicles and vessels;*
5. *the types of vessels used to transport supplies and materials; and*
6. *the environmental constraints of an area.*

These and other factors need to be carefully considered when identifying and analyzing the impacts of a proposed base.

Road Access and Traffic: Vehicle traffic could be significantly increased. Road access would be a serious consideration in the siting of any base because the traffic increase will have impacts related to air quality, congestion, increased risk of accidents, and the possible construction of new roads and parking areas. These impacts could be partially mitigated by using remote parking areas (offsite parking locations) and shuttle buses to transport personnel. In the case of a crew base, light and medium sized trucks would probably be used to deliver supplies and materials. Trips per day to and from a crew base would depend on the intensity and phase of development being supported. A supply base would utilize larger trucks to transport bulky materials. The trip frequency and road use would increase, as would the need

for a much larger loading and unloading area. A supply base would necessitate a significantly more intensive industrial use than would a crew base. It would require large trucks, cranes and mobile equipment. Roads could be significantly impacted.

Land Resources: The amount of land used, adjacent uses, current land use designations, and the impacts of a supply and crew base will be major siting considerations. The siting of a supply base at Port San Luis would subject the Avila Bay area to an intense use that would increase the industrialization of the area. A supply base proposed in Morro Bay Harbor would have similar implications. A supply base, unless carefully sited, could result in the degradation of sensitive habitats, agricultural land, or archaeological sites. Expansion of existing facilities for supply base purposes would raise issues related to cumulative impacts, the intensity of industrial activities, and conflicts with currently allowed harbor uses.

Water: Direct water impacts associated with a supply/crew base originate with both the project and the population directly related to the support base. Water use would be associated with onshore and offshore needs for potable and non-potable water. The amount of water used would vary depending on the phase and intensity of OCS development. Table IX-A on page IX-4 provides estimates of water usage during the different phases of drilling. Water demands are greatest during periods of drilling, whether exploratory or development. In 1985, Port Hueneme supplied an averaged of 37 acre feet (12 to 13 million gallons) per month for offshore drilling activities. It was estimated that water use would increase to approximately 61 acre feet (20 million gallons) per month in the near future. Port San Luis is currently allocated approximately 100 acre feet (32 million gallons) of water per year for all uses. It should be noted that Port Hueneme supports many platforms in the Santa Barbara Channel and the Santa Maria Basin. Typically, bases use the municipal water supply. Other sources such as groundwater wells and desalinization plants can be used. Given the current water situation in San Luis Obispo County, proposed water needs and consumption should be carefully studied and considered in siting a facility.

Air Quality: The effects on local air quality would be significant. It is unclear what the cumulative air quality impacts would be if future OCS activities in the Santa Maria Basin were continued to be supported from the existing network of supply/crew bases or if new facilities were developed in the northern Santa Maria Basin. Emissions would be generated by supply and crew boats while idling at the pier, cruising to their destinations, vehicle traffic to and from the site, loading equipment, and other small internal combustion engines.

Marine Traffic: Any supply/crew base would increase the number of vessels using a port. This increase in traffic would raise the risk of vessel collision and conflict. Increased congestion within a port or harbor waters can be expected. The competition between commercial and recreational fishing, recreational boats and support vessels for facilities would increase. In regard to other harbor users, the Local Coastal Plan states:

Service bases shall be sited in such a manner as to minimize conflicts with other harbor uses through the use of segregated wharfage, dock and fueling area,

careful site design in the location of wharfage and vessel approval lanes, and segregated vehicular traffic and parking facilities and areas.

Congestion at fueling areas could create long periods of idling and the potential for vessel conflicts.

Vessel Moorage Space: A base may need room within the harbor to safely moor vessels. Mooring space at existing county ports and harbors is becoming increasingly limited. In 1991, the Port San Luis Harbor had a waiting list of over 300 applicants for a mooring space. Morro Bay has a waiting list of 18-20 applicants for slips or moorings. Both facilities currently have a greater demand for moorings and slips than are currently available. The Local Coastal Plan also states that a proposed service base for an existing port shall study the feasibility of improving the present level of facilities and moorage for commercial fishing and recreational boating. A support base would create increased competition among users for mooring space. Port San Luis currently has no dockside berths available. Port San Luis is not a sheltered harbor. During storms and or southerly swells the waves have been as high as 25 feet within the harbor.

Noise: As support vessels approach the shore and leave from the base, noise from their engines will be noticeable. This issue could be significant especially if a crew base is to be operated 24 hours a day. This issue should be evaluated when a base is proposed. A base may have pumps, small machinery and other equipment that create noise. Also, if helicopters are used to transport personnel, the noise impacts could be significant. Helicopter noise can be mitigated to certain degree by using helicopters with certain specifications. These noise impacts to the community would need to be considered.

9.9 Policies

Supply Base

1. A supply base proposal would require an amendment to and subsequent consistency with the county's existing Local Coastal Program and the Port San Luis Harbor Master Plan where applicable. A supply base is not consistent with the LCP as certified by the California Coastal Commission nor with the Port San Luis Master Plan and is not currently considered an allowable use. Projects shall be sited in such a manner that segregates the associated activities from other harbor users, thus reducing the potential for conflicts and accidents.
2. A proposal for an amendment to the LCP for a supply base shall clearly define the scope of the operation during the life of the project. The amount and type of supplies transported to and from should be identified, the number of personnel to be transported, the type and size of boats to be used, the number of daily trips, and other equipment that would be operated. Also identified should be the types of drilling operations that will be supported and the time frame.

3. Air quality issues related to the operation of supply base will be evaluated and regulated by the county's Air Pollution Control District and shall utilize the best available control technology (BACT) to the maximum extent feasible.
4. A comprehensive analysis of the needs related to mooring, land, pier, water, roads and access, parking, and other harbor facilities required by a proposed supply base shall be completed. Current users, such as commercial fishermen and recreational boaters, shall be included in the analysis.
5. Designated vessel traffic lanes should be mutually agreed upon by all users and jurisdictions of a harbor where a supply base would be sited. The Fishermen/Oil Liaison office in Santa Barbara County should be used for coordinating these concerns.

Crew Base

6. A crew base proposed in San Luis Obispo County shall comply with the Local Coastal Program, Land Use Element policies and regulations and the Port San Luis Harbor Master Plan where applicable. It shall also be sited in such a manner that segregates the associated activities from other harbor users, thus reducing the potential for conflicts and accidents.
7. A proposal for a crew base shall clearly define the scope of the operation. The amount and type of supplies transported shall be identified, the number of personnel to be transported, the type and size of boats to be used, the number of daily trips and other equipment that would be operated. Also identified shall be the types of drilling operations that will be supported and the time frame.
8. Air quality issues related to the operations of crew base will be evaluated and regulated by the county's Air Pollution Control District when and if a proposal is submitted and shall utilize the best available control technology (BACT).
9. A comprehensive analysis of needs related to mooring, land, pier, water, roads and access, parking and other harbor facilities or resources required by a proposed crew base shall be completed. Current users such as commercial fishermen and recreational boaters shall be included in the analysis.
10. Designated vessel traffic lanes should be mutually agreed upon by all users and jurisdictions of a harbor where a crew base would be sited.

Specific Policies

1. That the county's Local Coastal Program, the industrial and energy policies in the Framework for Planning and the San Luis Bay planning area standards, shall be

periodically reviewed for consistency and modified if appropriate. Specific consideration should be given to:

- clarifying definitions of a crew, service and supply base;
 - updating the list of potential crew or supply sites based on new information;
 - clarifying the LCP to state that supply/service and crew base's are clearly different facilities;
 - updating the LCP to clearly indicate that a change in operational use by a base, such as from temporary to permanent status, will require a separate review and analysis; and
 - coordination with Port San Luis Harbor District for consistency with the Harbor Master Plan.
2. That any proposed crew base or proposed LCP amendment for a supply base provide a list of the types and quantities of supplies, materials and equipment to be transferred to and from the base.
 3. Require crew boats to meet specific operational standards and have certain characteristics depending on the safety and environmental factors of the area they are proposed to operate in.
 4. Require that all crew boats be manned or monitored 24 hours a day during storm season (October 15 through April 15) to assure they do not break off their moorage and damage other boats.
 5. That the maximum number of crew boats docking per day per operator be limited depending on the carrying capacities of the area proposed for a site.
 6. That a vehicle trip reduction program will be required to and from the transfer site.
 7. Local hiring of personnel shall be encouraged by companies participation in a local hire program.

CHAPTER X: OIL SPILL RESPONSE

10.1 Introduction

Responding to a large oil spill is a complex undertaking that involves many federal, state and local government agencies and private companies. Private companies involved include the owner of the oil spilled, the company transporting the oil, private contractors who are hired to clean up the spill, and response organizations designed specifically for oil spill response. This chapter will outline the current response structure if a large oil spill occurred offshore San Luis Obispo County, discuss the resources that are available for responding to an oil spill, and the present role of the county. The chapter will begin with a discussion of the most recent laws affecting oil spill response: the federal Oil Pollution Act of 1990 (OPA 1990) and California's Oil Spill Prevention and Response Act (Senate Bill 2040).

10.2 Oil Spill Legislation

The Oil Pollution Act of 1990 (OPA) is broad federal legislation that covers a variety of issues related to oil spill prevention and response. This legislation was enacted largely in response to the Valdez tanker incident. The following is a list of some of the components:

- The National Oceanic and Atmospheric Administration (NOAA) is developing natural resource damage assessment regulations (more precise ways of evaluating the environmental damage caused by an oil spill);

Studies related to liability limits and safe navigation;
- Report on maritime oil pollution prevention training program;
- Regulations on vessel communications equipment;
- Revisions to the National Contingency Plan;
- Report on and addition of equipment to vessel traffic systems in Port of Valdez;
- The Coast Guard has developed a report that studies vessel traffic systems;
- The establishment of a National Pollution Fund Center;
- The development of regional contingency plans and regulations for contingency plans;

- Initiates a study of safe navigation procedures and develops regulations for tanker escorts;
- Develop regulations on oil spill clean up equipment;
- A report on double hulled tanker alternatives.

OPA 1990 is multi-faceted legislation that is being implemented by a variety of federal agencies and will affect state and local governments, as well as industry. The act gives the Coast Guard more authority to direct a response effort without federalizing the clean-up. An oil spill response can still be federalized when the response effort is deemed inadequate.

California has passed Senate Bill 2040, the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act which amends several state codes with relation to oil spills. The bill requires several tasks be completed:

- The Governor will appoint an administrator for oil spill response;
- Establish the state oil spill contingency plan pursuant to the California Emergency Services Act. It also requires an amendment to this plan by adding a marine oil spill contingency planning section, which provides the best achievable protection of the coast and marine waters by January 1, 1993;
- The bill creates the State Interagency Oil Spill Committee which consists of state agencies who will be involved in an oil spill response;
- The bill also describes the powers and duties of the administrator concerning prevention, removal, response, and containment of spills in state marine waters;
- The bill specifies marine safety requirements for tankers, barges, and marine terminals operating in marine waters;
- The bill requires the notification of the state Office of Emergency Services regarding all oil spills;
- The bill requires preparation and implementation of oil spill contingency plans for petroleum facilities such as marine terminals, refineries, and separating plants; and
- As of January 1, 1992, the bill requires every operator of a vessel used to transport oil in state marine waters or the operator of a marine facility (such as terminal) to obtain a certificate of financial responsibility.

The bill also creates three funds, each with a different purpose. The Oil Spill Prevention and Administration Fund implements oil spill prevention programs, completes related studies, reimburses member agencies of the State Interagency Oil Spill Committee, and provides a funding mechanism to implement and maintain emergency programs. This fund is supported by a 4 cent per barrel fee on crude oil transported across, under or through marine waters. The Oil Spill Response Fund is created for use only in the event of an oil spill. It is funded by a 25 cent per barrel fee paid by the operators of marine terminals, pipelines, and refineries. The Environmental Enhancement Fund will be created by the penalties charged to the spiller. The funds will be used for environmental enhancement projects. It cannot be used for oil spill clean-up or restoration of an area damaged by a spill. The bill creates the Office of Oil Spill Prevention and Response under the Department of Fish and Game. This office is responsible for preventing, preparing for, and responding to an oil spill.

The state administrator for oil spill response has a variety of other duties related to training of personnel, equipment deployment, and the use of volunteers to help cleanup a spill. The administrator can also delegate some of the tasks to a deputy administrator and an assistant deputy administrator. The administrator is responsible for developing an interstate compact with the states of Alaska, Washington and Oregon, regarding the tankers and barges that transport oil.

The bill also creates the State Interagency Oil Spill Committee which consists of representatives from over 15 state agencies. The administrator is the chairperson of the committee. This committee will work together to coordinate an efficient response.

10.3 Industry Response Organization

In general, the spiller is responsible for all emergency response operations and long term clean up activities. The spiller is to hire contractors to clean up the spill, direct the clean up, and provide adequate resources in response to the spill. The spiller may request federal assistance from the federal On-Scene Coordinator (OSC) in responding to a spill. The OSC will monitor the response to make sure it is proceeding in an expeditious manner. The spiller will be held liable for all costs related to the response and clean-up. If the response is deemed inadequate by the federal on-scene coordinator (OSC) or the spiller is unknown or refuses to take responsibility, the OSC can take command of the response effort. This action means the spill has been "federalized" and that federal money and resources can be used to insure an adequate response effort.

As discussed earlier, industry would be responsible for the first line of response. During the response a number of organizations may be involved in responding to the spill. Typically, oil companies have a unified command system which provides a structure for coordination and communication between the various parties involved in the response.

Offshore oil operations are regulated by several different government agencies with regard to oil spill response. The Coastal Commission require platforms to comply with specific

preparedness, training, and prevention standards. The Minerals Management Service (MMS) also have regulations regarding preparedness and prevention. They perform regular inspections of blowout prevention equipment and require oil spill drills at the platform.

Each company typically has its own oil spill contingency plan that is designed specifically for their needs. The plan needs to comply with various government regulations. The new federal and state legislation has stricter criteria for contingency plans, thus many company plans are in the process of being revised. A companies internal contingency plan will include:

- a brief description of the facility, its purpose, and the physical layout;
- the response organization which describes the roles and responsibilities of various employees;
- a notification/activation system which provides a structure for contacting key people within the company and government agencies;
- response and training techniques are discussed;
- health and safety procedures for workers and local community;

The plan should include a description of the area that could be affected by a spill. This would include information about animal species that are present during certain times of the year, haul out ares for pennipeds, shoreline type and other data about the environment. Also included should be a list of resources to be called in to assist with the clean up.

10.4 The Federal Response Organization

This section will describe the responsibilities each organization has in the event of an oil spill. The party responsible for a spill is legally required to notify both the state Office of Emergency Services and the National Response Center. Generally, a spill has two phases of response; the initial emergency response in the first few hours of the spill, and the longer term clean up that may take months to complete. It should also be noted that with the new federal and state legislation that has recently been approved and is still being interpreted, the responsibilities of various governmental agencies may be revised. The end result of the legislation should be an overall strengthening of the response structure, along with an increase in the amount of equipment and other resources that can be used to clean up a spill. Figure X-1 shows the general structure of the federal response organization.

National Response Team (NRT): The National Response Team (NRT) is an interagency group with representatives from 14 federal agencies. Each agency has expertise or jurisdiction involving oil spills and their affect on public health and welfare and the environment. The framework for the federal national response system is the National Oil and Hazardous Substances Pollution Contingency Plan, referred to as the National Contingency Plan (NCP).

The NRT's primary responsibilities include setting and maintaining national response policy, evaluating the effectiveness of the national response system, and making recommendations to improve the system. The NRT is not a direct responder in the event of an oil spill.

Regional Response Team (RRT): The Regional Response Team (RRT) is made up of federal and state representatives. Local municipalities and counties are invited to participate through the state representatives. The RRT is co-chaired by the Environmental Protection Agency (EPA) and the Coast Guard when there is not a response situation. When responding to a spill, the Coast Guard or EPA representative will become the chairperson depending on where that spill occurs. If a spill occurs, the jurisdictional line is described in the Region IX contingency plan (plan for western part of the United States), and generally follows Highway 1. The area west of Highway 1 is the jurisdiction of the Coast Guard and the area east of the Highway the EPA's.

The RRT is first alerted and then activated if necessary. An alert means that members of the team are informed about the incident and the likelihood of activation. The chairperson is responsible for alerting team members. The Regional Response Team is activated by the federal on-scene coordinator. The RRT's major responsibility is to provide technical assistance and coordinate available resources to the OSC for decision making.

One of the RRT's primary responsibilities when not responding to a spill is to ensure that regional and local contingency plans provide adequate information about a region's resources, and response capabilities. The organization chart on the following page depicts the Regional Response Team. The RRT conducts regular meetings, which are open to the public, a minimum of two times per year.

Federal On-Scene Coordinator: The Region IX Oil and Hazardous Substance Pollution Contingency Plan describes the land and water west of the Coast Highway 1 as the coastal zone. A representative of the U.S. Coast Guard acts as the federal on-scene coordinator (OSC) for incidents originating in the state's coastline and navigable waterways or tributaries within the state. The OSC determines the status of the state and local response and monitors the situation to determine if increased federal involvement is necessary. The OSC may take command of the response if:

1. the spill is beyond the capacity of the company, industry, local, or state responders to manage; or
2. the scope or complexity of the response is beyond local responders capabilities; or
3. local responders lack or experience and/or equipment to manage the spill; or
4. the spiller is unknown.

Figure X-1
Federal Response Structure

The Coast Guard Captain of the Port of San Francisco Bay is the pre-designated federal OSC for oil discharges in the coastal zone (west of Highway 1) from the California/Oregon border south to the Santa Maria River. While the National and Regional Response Teams are essential elements of the federal program, the OSC is the actual decision-making official in any "federalized" response. In the area east of Highway 1 the Regional Administrator for EPA would be the federal on-scene coordinator (OSC).

Federal Classification of a Release: An oil release which causes a sheen on the navigable waters of the United States must, by law, be reported. A minor discharge is a spill to the inland waters of less than 1,000 gallons of oil, or a discharge to the coastal waters of less than 10,000 gallons of oil. The Coast Guard responds to most of these cases in the coastal zone without active participation by local or state agencies. The Coast Guard oversees the clean up. Where local or state agencies actively respond and/or express concern, the response is coordinated via informal communications. If disagreements arise that cannot be adequately resolved by on-scene personnel, the Coast Guard will seek further direction up the chain of command.

A Medium discharge is a release of 1,000 to 10,000 gallons of oil to the inland waters, or a discharge of 10,000 to 100,000 gallons of oil to the coastal waters. A more formal organization is necessary to ensure proper response coordination. The OSC will direct field personnel regarding response procedures, delegate authority, and coordinate with other regulatory agencies.

A major discharge is a discharge of more than 10,000 gallons of oil to inland waters, or more than 100,000 gallons of oil to the coastal waters.

10.5 State Response Organization

Although not required by law, many states have developed oil spill contingency plans. California's plan is consistent with the National and Regional plans. California is in the process of revising its contingency plan according to the new state oil spill legislation (Senate Bill 2040). In the event of an oil spill potential threatens state waters, the federal OSC and the administrator from California's Office of Oil Spill Prevention and Response would work closely with the responsible party to provide an adequate and coordinated response.

Administrator: The position of administrator is appointed by the Governor and was created by Senate Bill 2040. The administrator or his/her designee is the Incident Commander (IC) for California and is responsible for the management and coordination of all activities related to the incident. The administrator is to coordinate various aspects of oil spill response, including:

- ensuring support services, personnel trained in oil spill response, containment, and clean-up technologies, and emergency systems safety are available for emergency response;

- the primary authority to direct prevention, removal, abatement, response, containment and cleanup efforts with regard to all aspects of any oil spill in the marine waters of the state;
- cooperating with any federal on-scene coordinator as specified in the National Contingency Plan;
- be on the scene of any oil spill in excess of 100,000 gallons as soon as possible after notice of the discharge;
- appraise the State Interagency Oil Spill Committee, the local APCD and local government entities of the status of the spill and cleanup efforts;
- work with the State Fire Marshall, State Lands Commission, and the federal on-scene coordinator to determine the cause and the amount of the discharge;
- authority over use of dispersants consistent with water code regulations and with consultation of the federal OSC; and
- ensure that biologists and other personnel are onsite to complete natural resources assessments and collect data that documents the damage.

The state's incident commander (IC) is the counterpart of the federal on-scene coordinator. Conflicts between the federal and state contingency plans are being resolved. Oil spill drills are providing the federal and state agencies an opportunity to cooperate. Lines of communication and authority between the federal and state agencies are being defined. It should be noted that the use of dispersants is a multi-agency decision, made by the federal and state incident commanders with input from various agencies and local government. Specific federal regulations and state guidelines limit the use of dispersants to only prescribed meteorological and geographic circumstances.

State Interagency Oil Spill Committee: This committee is made up of a variety of state and local agencies which supports and advises the incident commander during an oil spill. The committee is much like the Federal Regional Response Team in that it provides technical support to the states incident commander.

State Classification of a Release: State officials define an oil spill as any unauthorized release of at least 42 gallons of oil into marine waters. A minor incident is categorized by the less than 10,000 gallons and can usually be handled by local resources. Significant human health and safety and/or environmental issues do not typically arise in a spill of this size. However, it should be noted that a spill of 10,000 gallons in a biologically sensitive area can be very damaging if the response effort is not well coordinated and vigorous.

A moderate incident involves a coastal release of 10,000 to 100,000 gallons and may require the use of mutual aid agreements or operational assistance or logistic support. This type of response usually requires that outside resources be contacted. Human health and safety and/or the environment are significantly affected.

A major incident involves coastal release of greater than 100,000 gallons and is beyond the capabilities of a local jurisdiction. Human health and safety and/or environment are severely affected. A declaration of local or Gubernatorial emergency may be issued and the Emergency Operations Center may be partially or fully activated.

A catastrophic incident significantly exceeds local capabilities. Considerable and substantial environment and/or public health impacts have occurred or are expected. A local emergency is usually declared, and a Governor's proclamation is issued along with a request for a Presidential Declaration.

10.6 Local Agency Role

The urgent nature of offshore oil spills necessitates a rapid and coordinated response. Most spills are responded to by local agencies (fire district, Health department, etc.) who assign an Incident Commander (IC) to ensure proper response. The federal OSC will be involved if the response is beyond local capabilities. The burden is on local responders to recognize when they require assistance. The Coast Guard may contact local agencies to determine if there is a need for federal assistance. If so, the Coast Guard will provide technical assistance to the incident commander, often times working directly with the county or city agencies. Although the Coast Guard takes on greater coordination role during spill incidents on waterfront facilities, a local agency should supply an IC. The Coast Guard will be the lead agency on shipboard hazardous material incidents when the vessel is away from the dock.

The Coast Guard does not have the authority to order an evacuation of local residents, but may make recommendations to the local IC after careful consideration. Initial response will be taken by the responsible company. That company will contact the cooperatives as needed. Local response to spiller companies and to the Coast Guard will generally be that of traditional police and fire field capabilities. Local agencies will be requested to support traffic control, communications, and equipment. The Coast Guard, the lead state agency, and local agencies are expected to maintain communication and closely work together in response to oil spills.

More detailed analysis of local issues related to emergency response will be described in the Oil and Gas Emergency Response Study being prepared by the Scientific Ecology Group under the direction of the San Luis Obispo County Office of Emergency Services.

Local government agencies that have a contingency plan would have a predesignated role in the response effort. Currently, San Luis Obispo County does not have a contingency plan dedicated strictly to marine and coastal oil spill. The county Office of Emergency Services is working with the state Office of Oil Spill Prevention and Response to develop a contingency plan. If a

spill were to occur, the county's role would be limited to supporting state and federal agencies. The county would appoint an incident commander (IC) to represent local concerns and help coordinate the response effort. Other local agencies that may be involved in the response include the Sheriff's Department, local fire agencies, County Health Department, County Engineering, Office of Emergency Services, and city officials. The Pacific Care Wildlife Group has set up an emergency oiled sea birds program that would be activated in the event a spill affects seabirds.

10.7 Available Response Resources

The response/cleanup process is a multi-level system. The concept is based upon on-site equipment suitable for first response and handling the majority of smaller spills. This is supported by large, more capable equipment stockpiled by industry-owned oil spill cooperatives and corporations as a second level of response.

The initial level of response is the onsite equipment or immediate response equipment. This equipment is usually owned or leased by the individual company operating the facility, whether it be an offshore platform, exploratory drilling vessel, or a marine terminal. In San Luis Obispo County several facilities have some on site equipment. Booms, skimmers, portable tanks, and sorbent pads are available at facilities in Estero Bay and Avila Beach. This response would be the activation of the companies internal contingency plans.

The secondary level of response may be the local oil spill cooperative. Each co-op has detailed contingency plans and a large inventory of equipment and trained personnel on standby. These are private companies funded by the companies involved in transporting, producing, and refining of petroleum.

The next level of response is the federal government and outside industry resources available on a 24 to 48 hour time frame. Examples are the National Strike Force, Navy owned equipment available from Stockton, California, and industry owned equipment available outside the local co-op. The co-ops have agreed to provide mutual aid to one another.

The following is a description of the various organizations and that are available to respond in the event of a large oil spill.

Clean Seas: The primary co-op for member company oil spills occurring along the coast line of San Luis Obispo County is Clean Seas. The Clean Seas organization is structured to respond to different levels of oil spills and to different levels of assistance requested by a member company. Clean Seas has two mobilization levels:

- Primary Response - Involves key staff members
- Secondary Response - Involves the mobilization of supervisors and operating personnel as needed to address the spill situation.

Upon notification of a spill and request for assistance by a member company, nonmember company, or a government agency, the Clean Seas manager will determine the level of activation necessary based on the type of assistance requested by the spiller. The primary response staff and their alternates are member company personnel who can be made available in the event of a mobilization request.

Upon determining the degree of response necessary to meet the spiller company's request for assistance and ascertaining which staff positions the spiller company will fill with its own personnel, the Clean Seas manager will instruct the mobilization coordinator to activate the response plan. Clean Seas conducts regular training and has an oil spill clean up vessel stationed at Avila Beach and also stores equipment near the marine terminal in Estero Bay.

Fishermen's Offshore Response Team (FORT): This is an organization made up of local fishermen who are being trained to use booms and other clean up equipment. They would be activated in the event of a large oil spill. The organization is sponsored by the oil industry. The training is conducted by Clean Seas.

Marine Spill Response Corporation (MSRC): This is a non-profit organization funded by industry. The purpose of the organization is to respond to large oil spills that are beyond local response capabilities. MSRC would be directed by the responsible party. The corporation is developing a comprehensive data base of equipment and personnel resources for oil spill response. They are doing research and development to improve oil spill information and clean up technology. They are setting up five regional response centers, each supported by equipment storage sites. Port Hueneme will be the site of the response center and equipment storage. Two new oil recovery vessels on the west coast will be added, one in Port Hueneme and one in San Francisco.

By February, 1993, the Oil Pollution Act of 1990 requires vessel owners and operators and other responsible for transportation or storage to show they have in place contracts to contain and clean up, to the maximum extent practical, a worst-case scenario oil spill. By becoming a member of MSRC an oil company stands a better chance of meeting this requirement. So far most of the major companies have joined the organization.

National Strike Force: Occasionally a situation may occur where there are no contractors available. In such cases the Coast Guard has a National Strike Force. This strike force consists of three regional teams located in New Jersey, Alabama, and Marin County, California at the former Hamilton Air Force Base. The strike force will provide technical advice on cleanup or containment procedures and will bring equipment to be used in the actual cleanup operation. A national inventory of pollution response and support equipment has been developed to assist the on-scene coordinator and the Regional Response Teams. The Coast Guard is presently stationing additional oil spill equipment in Long Beach port and in the Clean Seas yard in Carpinteria. The strike force has equipment in San Francisco. The federal OSC has the authority to request that the equipment be used.

Pacific Strike Team: The strike team is located at Hamilton Air Force Base in Marin County. The team was created as part of the Special Forces from the Federal Water Pollution Control Act of 1972, which was later amended to the Clean Water Act. It is a cadre of Coast Guard personnel trained in oil and chemical spill cleanup. It has twenty-eight personnel, four officers, twenty four enlisted. They provide support for the OSC. The OSC has the authority to call upon the strike team for assistance.

10.8 Policies

1. That San Luis Obispo County representatives participate in oil spill drills and activities implemented by the California Office of Oil Spill Prevention and Response.
2. That a county task force of local agencies and industry that may be involved in an oil spill response effort be formed to build an efficient and coordinated response organization that can support the state and the federal response structure. The task force shall consult with native american representatives regarding potential impacts to cultural resources during the formation and through implementation of the oil spill response effort.
3. That the county Office of Emergency Services work with the state Office of Oil Spill Prevention and Response to develop an oil spill contingency plan for the marine and coastal environments of the county.
4. That the county identify and obtain funding sources for contingency planning and related activities.
5. That training programs for county agencies related to oil spill prevention and response be developed.
6. That the county compile all industry contingency plans in a central and accessible location.
7. The resources, equipment, and personnel, who will respond to an oil spill are clearly known to all entities involved in an oil spill response. That identification badges be provided to those individuals who will be involved in spill response.
8. As part of land use permit applications related to new oil and gas facilities, the county should consider whether contingency funds are available that would be used to purchase response equipment, set up training programs, and provide funds for immediate response by pre-designated entities.
9. The county will coordinate with the state Office of Oil Spill Prevention and Response to insure that all facilities have adequate financial resources for reimbursing the county for any damages or costs incurred as a result of an oil spill.

10. That county develop a program which provides citizens with the appropriate training and certification to be qualified volunteers in a clean up effort.

