COASTAL MANAGEMENT IN THE UNITED STATES
A SELECTIVE REVIEW AND SUMMARY*

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SUMMARY

Coastal management (CM) in the United States developed in response to two major imperatives: (1) the need to protect and preserve threatened coastal resources, such as land, water, air, scenic and esthetic values, and the natural components of the marine and coastal environment (beaches, dunes, estuaries, barrier islands, etc.); and (2) the need to manage the use of coastal resources in a rational manner, resolve use conflicts and strike a reasonable balance between developing and preserving resources. The structure of the national CM program created to meet these needs has been heavily influenced by the federalist character of the U.S. government. Thus, as briefly described in this report, the U.S. coastal management program is decentralized and dependent upon state agencies and authorities to achieve the national goals and standards established by the Coastal Zone Management Act. Yet the federal government retains sufficient authority to ensure that the four basic CM goals and nine program performance standards are met by the state programs.

The principles of marine and coastal science and technology are applicable in all areas of the world. This body of knowledge is readily transferable. But the experience and art of coastal management is not as accessible or as easily carried from place to place. Successful coastal management is a mixture of science, policy, law and administration and is highly dependent upon the social, economic and political circumstances in each country and culture. The U.S. coastal management program has existed since the early 1970s. Fifteen years may not be a sufficient period in which to judge conclusively the outcome of a complex and innovative resource management program. But indisputably a

serious and sustained program of coastal management is underway in the United States with significant results. Its relative success depends entirely upon how well each state program and the national program as a whole has adapted to the circumstances mentioned above. However, the record of U.S. coastal management experience selectively reviewed in this report is encouraging and its careful study will be useful in planning other national CM programs.

INTRODUCTION AND BACKGROUND

Coastal management in the United States began in earnest following the passage in 1972 of the Coastal Zone Management Act (CZMA).[1] The early 1970s in the United States was a period of intense and substantial efforts to protect and preserve the environment. The Clean Water and Air Acts were passed into law during this period, in addition to numerous other federal and state laws, most of which were intended to deal with specific problems caused by generally worsening environmental conditions - polluted air and water being in the forefront. The CZMA, however, was intended to address comprehensively a number of problems created as a result of a growing population and associated economic and development activities in the nation's coastal areas. These activities, including offshore energy and mineral development, marine transportation, fishing, the siting of major industrial and commercial facilities, residential development and marinas in the shorelands of the coastal areas, tourism and recreational boating, have substantially and often adversely affected coastal natural resources.

Although a major goal of the CZMA is to protect and preserve natural coastal resources, the Act was primarily intended to change the way in which federal, state and local agencies and officials manage these resources and allocate them among competing users. Briefly, the Act's goal was to establish a voluntary partnership between the federal and state governments in which the states would play the major role in managing and allocating the resources of

their coastal areas and the federal government would provide funds to assist the states in organizing and administering coastal management programs. However, the coastal states could receive federal funds for coastal management only if they developed and administered programs meeting the national standards established in the CZMA. The federal government through its agency, the National Oceanic and Atmospheric Administration (NOAA), was actively involved in developing and approving state CM programs, and continues its involvement by evaluating state program performance and by administering federal grants to pay for a major share of the costs of operating state programs.

The decision not to establish a federal agency to deal with the problems caused by growing population and economic pressures on diminishing coastal resources, but to rely on the states as the appropriate level of government to manage these resources was based on several important factors. First, there are management problems posed by the size of the United States coastal area and the number of separate state and local governments involved. There are 35 coastal states and territories in the United States, covering more than 95,000 miles of coastline. Nine of the ten largest urban areas in the United States are located along its coasts, and it is anticipated that by 1990, 75 percent of the United States population will live within 50 miles of the nation's shores, including the Great Lakes. Each of these 35 coastal states and territories is a separate legal, political and administrative jurisdiction. The United States is a federalist government and its powers are constitutionally limited (that is, if powers are not granted to the federal government by the Constitution, then such powers are reserved to the states and citizens). Because each coastal state is a separate jurisdiction, its laws and not federal laws govern most land and water uses within its territory. By federal law, coastal states also own and regulate the natural resources of their coastal waters which extend three nautical miles from their shores (the U.S. territorial sea). Therefore, in the United States' federalist system of government the power and

authority of coastal states is larger than the power of the federal government to manage and allocate coastal natural resources.

Of course it is possible for the federal government to control the use of many coastal resources by exercising its constitutional authority to regulate commerce among the states, or to manage the nation's waters. If the federal government acts in any particular area in a manner which is constitutionally permissible (e.g., to control water pollution in the waters of the United States), its laws are superior to state laws. However, when the CZMA was being drafted, the coastal states strongly opposed any move by the federal government to claim greater authority to regulate state coastal resources. A large, centralized federal program with broad powers to control development in the nation's coastal areas would not have been approved by the Congress.

In summary, it is in the following physical, economic and political context that we must understand coastal management in the United States:

1. a coastline that extends more than 95,000 miles;
2. a large and growing urban population located in the coastal areas with its associated demands on the environment;
3. intense economic competition for and pressures on the nation's coastal natural resources;
4. diverse and separate political jurisdictions with varying authority to manage and allocate coastal resources; and
5. resistance to any largescale, centralized federal effort to regulate development in the nation's coastal areas.

National Coastal Management Goals and Standards

The CZMA authorizes a national CM program founded on a partnership agreement between the federal and state governments. In effect, through the CZMA, the federal government offers the coastal states financial assistance to develop state CM programs conforming to minimum federal standards established by the CZMA and its implementing regulations, and assumes the legal responsibility under the Act to assure that the activities of the federal government itself as well as federally-permitted activities are consistent with state programs.

Congress declared four basic national CM policies in the CZMA:

1. To preserve, protect, develop, and where possible, to restore or enhance the resources of the coastal zone of the United States (section 303(1) of the CZMA);

2. To encourage and assist the states to develop and to implement CM programs meeting specified national standards (section 303(2));

3. To encourage the preparation of "special area management plans" to protect nationally significant natural resources, to ensure "reasonable coastal-dependent economic growth," and to provide "improved protection of life and property in hazardous areas and improved predictability in governmental decisionmaking" (section 3003(3)); and

4. To encourage the participation and the cooperation of public, state and local governments, interstate and other regional agencies, and federal agencies in achieving the purposes of the CZMA (section 303(4).

To further these national CM policies, Congress determined that state programs must, at a minimum, provide for:

1. The protection of natural resources, including but not limited to, wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat within the coastal zone;
2. The management of coastal development to minimize the loss of life and property in hazardous areas;
3. Priority consideration of coastal-dependent uses, and an orderly process for siting major facilities related to national defense, energy, fisheries development, recreation, ports and transportation, and the location of new development in or adjacent to areas already developed;
4. Public access to the coasts for recreation purposes;
5. Assistance in the redevelopment of urban waterfronts and ports, and preservation and restoration of historic, cultural and esthetic coastal features;
6. Coordination and simplification of governmental decisionmaking for the management of coastal resources;
7. Consultation and coordination with federal agencies;
8. Participation by the public and local governments in coastal management decisionmaking; and
9. Comprehensive planning, conservation and management for living marine resources, including planning for the siting of pollution control and aquaculture facilities in the coastal zone, and improved coordination between state and federal agencies.[2]

Simply stated, these four basic policies and nine performance standards are the essential elements of the United States' national CM program.

Three Approaches to Coastal Management

The CZMA authorizes the coastal states to choose one or a combination of three different approaches or management techniques to achieve the goals and standards of the Act:

1. local government implementation, according to standards established by the state, subject to state administrative review and enforcement;

2. direct state land and water use planning and regulation; or

3. state review of development plans and projects, and land and water use regulations, prepared by any state agency or local government, or by private developers, with the power to approve or disapprove.[3]

Coastal states have usually relied upon a combination of these management techniques to implement CM under the Act. In states such as Florida and Wisconsin, which share coastal resource management responsibilities among several agencies, the management structure is a "network" of authorities, agencies and staff linked together by the statewide CM policies approved by the federal government, under the umbrella of a single state agency designated to administer the program. States such as South Carolina and California have enacted comprehensive legislation to manage coastal resources, and have established CM agencies with broad authority to review and permit major activities in the coastal zone. Many states including California, Alaska, Washington and North Carolina have fostered the development of local coastal plans, and major CM responsibilities have, in some cases, been delegated to local government. Thus, the three coastal management approaches authorized by the CZMA have accommodated and been adapted to greatly varying social, political, legal and environmental circumstances among the states.

Federal-State Roles in Coastal Management

Although CM in the United States is a cooperative federal-state program, as described above, the roles played by the federal and state agencies are clearly distinguished in the CZMA itself and in practice. On-the-ground coastal management is carried out by state and local governments, according to state laws, policies and standards. Of course, the federal government has approved these state authorities, and provides funding to support state CM programs. However, it is clear that state CM programs are not "federalized" as a result of this assistance, and that they remain wholly state agencies.

The federal role in CM is to assist the development of and to approve state programs, to adminster federal grants, to evaluate state program performance against the CZMA's performance criteria, to review and approve changes to state programs, to conduct research and provide technical assistance on coastal management issues and problems, and actively to strengthen state programs and promote the national interest in coastal management. In approving state programs, the federal government must ensure that the national interests served by major projects in the coastal zone are adequately considered by state officials. As a corollary to this responsibility, the federal government is obligated to conduct its activities in a manner consistent with state CM programs approved under the CZMA.

STATE COASTAL MANAGEMENT GOALS AND PRIORITIES

Although state coastal management programs were required to adopt policies that met the minimum standards of the CZMA, federal program managers allowed considerable flexibility to each state in choosing its own program goals and priorities to address varying state coastal conditions and problems. This section considers the different goals and priorities chosen by states with respect to the specific coastal resources, uses and values subject to managment

by their coastal management programs, the problems of maintaining a proper balance between development and protection of coastal resources, and the issues involved in determining coastal zone boundaries.

Protecting Coastal Resources

All state programs were required to develop policies to protect important coastal resources (wetlands, beaches, estuaries, coral reefs, fish and wildlife, etc.) and this goal has high priority in all programs. However, states were encouraged to concentrate their efforts on protecting coastal resources of critical importance to them, and different emphases respecting resource protection have emerged. Louisiana, for example, has 28 percent of the wetlands remaining in the United States. Because of the drastic and continuing rate of wetlands loss, the destruction of fishery habitats and the problems caused by salt water intrusion, preserving wetlands and estuaries in this state naturally has the highest priority. Louisiana has developed coastal management laws and policies to protect wetlands and estuaries which address such matters as the construction of canals, channels and levees in wetlands and estuaries, the disposal of dredge spoils, shoreline modification, surface alterations, and energy and mining activities affecting wetlands and estuaries.

Preservation of beaches, dunes and coastal barrier islands is a priority in many states, and particularly in South Carolina and North Carolina. The coastlines of these states are struck periodically by hurricanes and winter storms causing loss of life and damaging property. Maintaining the natural barrier system of dunes and islands against the wind and water generated by such storms is of crucial importance to these states. Both the South Carolina and North Carolina Coastal Management Programs incorporate strict laws and policies to protect beaches, dunes and barrier islands from destruction and to control development activities and projects in or near these areas.

The protection of coral reefs is of particular concern to Hawaii, Florida, and island territories and commonwealths. The Florida Coastal Management Program incorporates policies to protect water quality in the Florida keys, which is vital to the maintenance of the extensive offshore coral reef system. Further, Florida cooperates with the federal government to provide additional protection for unique coral reef areas by designating them as state parks and national "marine sanctuaries."[4] These designations under both state and federal laws provide funding and staff to manage and protect coral reef resources. The Northern Mariana Islands, Guam, American Samoa, Puerto Rico, the Virgin Islands and Hawaii also emphasize the preservation of island coral reef systems.

Minimizing Coastal Hazards

Planning for and mitigating the hazards to life and property from hurricanes and severe winter storms has high priority for all states along the Gulf of Mexico and South Atlantic coasts, and the coastal programs of these states incorporate specific hazards planning and action elements. Florida, with its many cities and the largest population near the South Atlantic and Gulf coasts, is especially vulnerable to these hazards, and its coastal program has devoted considerable funds and staff to developing hurricane evacuation plans and analyzing post-disaster redevelopment costs. Many states including Alabama, North Carolina and South Carolina prohibit new construction on beaches and dunes and enforce stringent construction setback limits in order to reduce exposure to loss or damage. Reconstruction of structures damaged or destroyed by hurricanes and storms is also regulated, and prohibited in some cases. These states have also devised policies which restrict the expenditure of public funds to provide services and facilities in hazardous coastal areas necessary to support new development and population.

Public Access

Access to beaches and coastal areas is a major problem and priority in many states with large coastal populations. Providing increased coastal access has been one of the principal tasks and accomplishments of the California Coastal Management Program. This Program has employed a number of techniques to accomplish public access objectives, including the acquisition of land, vigorous enforcement of public rights of beach access through privately-owned coastal property, and the conditioning of coastal development permits in order to establish public access corridors to beaches. Oregon, Washington and Massachusetts are examples of other coastal states particularly concerned with problems of public access to beaches and coastal areas.

Managing Living Marine Resouces

Because of the strong emphasis in coastal management upon land use planning and controls, as distinguished from water-related planning, and the existing regional fishery management councils charged with regulating fishing in the federal 200 nautical mile Fishery Conservation Zone, managing living marine resources has typically not been of high priority for state coastal management programs. Yet, fisheries located in state waters (the three nautical mile territorial sea) are more important commercially than fisheries located in federal waters. Several states with important commercial fisheries, such as Alaska, California and Florida, have devised and implemented policies to promote commercial and recreational fishing. Coastal policies to protect estuarine and fishery habitat areas and to preserve or improve water quality also contribute to good management of living marine resources. Nevertheless, most state coastal management programs do not adequately address this goal.

Preserving Coastal Dependent Uses

All state programs include policies to preserve coastal dependent uses. However, this goal is especially important to states that have in the past enjoyed flourishing ports and maritime commerce and industry. The decline of such ports and related maritime enterprise has left in its wake deteriorating facilities (wharves, docks, waterfront buildings, etc.) which have become prime targets for new enterprise which for the most part is not coastal or water dependent. Traditional water related uses have lost out economically to new uses. The problem is perceived by coastal planners as one of finding methods to preserve coastal dependent uses even though in the short term such uses may not be as economically productive as non-water or coastal dependent uses.

The industrial coastal states of the northeast United States (e.g., Maine and Massachusetts) which have suffered serious decline of ports and harbors have devised policies to preserve shipping and maritime facilities. Maine has invested in land and facilities which have in turn been leased to shipyards and maritime enterprises on reasonable terms. In those states such as California and North Carolina which manage coastal development through a permitting system, coastal dependent uses are given priority over non-coastal dependent uses.

Redeveloping Urban Waterfronts and Ports

For the reasons discussed above, several states have made the redevelopment of urban waterfronts and ports a major priority. For example, the New York State Coastal Management Program has invested substantial program resources in the development of 64 local waterfront revitalization plans to provide local governments with enforceable policies to guide coastal development. The Michigan Coastal Management Program has achieved large results from funding relatively small but carefully targeted construction projects in lakeside waterfront areas. These projects have led to other projects funded by sources

other than the State CM Program which cumulatively have been effective in redeveloping waterfronts and ports and attracting new enteprises to these areas.

Siting Major Industrial and Commercial Facilities in the Coastal Zone

The national policy expressed in the CZMA requires that state programs provide "for adequate consideration of the national interest" in projects and facilities to be sited in the coastal zone "necessary to meet requirements which are other than local in nature" (section 306(c)((8) of the CZMA). However, the policy does not require that states approve such projects and facilities, but only that the states adequately weigh the national interests served by them and determine whether their benefits outweigh their negative effects. This national coastal zone managment policy, more than any other, has generated the sharpest conflicts between the federal government and the coastal states concerning the siting of energy facilities in the coastal zone (oil and gas platforms, refining, storage and transport facilities, nuclear plants, defense-related projects, etc.). The primary reason for this conflict has been the difficulty of determining the "national interest" benefits of a specific project. The CZMA itself does not define the "national interest" - it merely requires that the national interest be considered. Often, the construction of new outer continental shelf oil and gas development facilities is clearly in the national interest of securing domestic energy supplies, but specific projects may encroach upon nearshore areas, threatening the habitat of marine mammals and seabirds, important fisheries and scenic and esthetic values vital to local, state, regional and national interests (e.g., tourism, environmental and preservationist organizations). Preserving these resources, uses and values of the coastal zone is also in the national interest. Thus, many conflicts have arisen concerning the balance struck by state coastal management programs between competing national interests.

Nevertheless, as a prerequisite to approval of their coastal programs, states were required to demonstrate that their decisionmaking processes for siting major industrial facilities in the coastal zone would adequately consider the national interests served by such facilities. These state mechanisms vary substantially from state to state. For example, Washington has established by law a major energy facility siting council which considers each major energy project and makes recommendations to the governor. The review process requires the preparation of an environmental impact statement, public hearings, and a written recommendation based upon a detailed record. This process fulfills the "national interest" requirement of the CZMA.

However, the Delaware Coastal Management Program incorporates a state law prohibiting new industrial facilities in the coastal zone except at certain specified locations. This strict policy limiting industrial development along the Delaware coast reflects a state decision that coastal resources and values are significantly threatened by new industrial projects sited in the coastal zone. Yet, this state policy was also determined to provide adequate consideration of the national interest in the siting of industrial facilities in the coastal zone and approved by the federal government as part of the Delaware program.

Most state programs fall between the approaches taken by Washington and Delaware, and include a policy in their programs requiring that the national interest be considered in reaching industrial siting decisions.

Clustering New Coastal Development

The CZMA requires that new industrial and commercial development be located, wherever possible, "in or adjacent to areas where such development already exists" (section 303(2)(C)). In part, Delaware's policy prohibiting new industrial development except in specific areas of its coastal zone (discussed above) may be justified on the basis of this national policy. Most

states which have already experienced extensive coastal development employ land use zoning restrictions to "cluster" new development in certain areas of their coastal zones. In states such as California with much of its southern and central coastline already developed, and in island territories and commonwealths where land available for development is severely limited, state programs apply stringent policies to control the spread of coastal development.

Promoting Coastal Development

Although the CZMA is primarily directed toward protecting and preserving the coastal environment, the balanced development of coastal resources is also a major national CM goal. In addition, the CZMA requires that coastal states give special consideration to protecting and promoting water dependent activities, including development activities dependent upon access to or use of coastal resources. In response, coastal states have established a priority for many water dependent activities (e.g., fishery facilities, docks, piers, processing plants, boat marinas, tourism facilities, ports and harbors, energy facilities, etc.). Examples of successful coastal development projects funded by state CZM programs are provided in Appendix B.

Drawing Coastal Boundaries

The CZMA establishes a definite seaward limit to a state's coastal zone - the limit of the three nautical mile territorial sea in which, by federal law, the state owns the submerged lands and resources. However, the inland boundary is elastic. The CZMA requires that the coastal zone extend inland "only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters" (section 304(1)). The states have applied this definition in widely varying circumstances to establish a coastal zone extending only 200 feet from the mean high water mark (Washington), including all coastal counties (North Carolina), and covering the entire state or territory (Florida, Hawaii, Guam, American Samoa, and the Northern Mariana Islands).

Initially, the delineation of coastal boundaries was thought to be a major problem in developing state programs. It has not proven to be so, because of the decision by the federal program managers to focus first on the uses and resources each state should and desired to manage (the goals and priorities set by each state to meet its particular coastal conditions and problems), and then to describe inland boundaries appropriate to such goals. [See Matuszeski, "Managing the Federal Coastal Program," 5 JAPA 266-274 (1985).] Approaching the problem in this manner, states were able to determine inland boundaries with less trouble than originally anticipated.

The arbitrary seaward limit of state coastal zones, as prescribed by the CZMA, however, has caused many resource management problems for the states, the federal government and development interests, and will continue to do so in the future. These problems have their origin in the discontinuity between: (1) rational resource management planning, which should incorporate the entire area where such resources are located and involve the principal actors (governmental and private) interested in using or preserving such resources in the decisionmaking process governing their use; and (2) traditional political and legal jurisdictions which do not recognize natural resource boundaries and cut across them in an irrational manner. As a result, jurisdictional and management disputes between the states and the federal government have arisen which have not been satisfactorily resolved. These problems (particularly those involving the management and development of offshore oil and gas resources) are among the most serious that have occurred in coastal management in the United States.

Coastal management uses many traditional land use planning techniques and controls. All state programs employ such well-tried practices as zoning and subdivision controls, comprehensive planning, growth management planning, preservation of agricultural lands and open spaces, and permitting systems to achieve their coastal management goals. However, a number of techniques have been adapted particularly for coastal management and are discussed below.

Special Area Management Plans

One of the four major goals of the CZMA is to encourage the use of special area management plans (SAMPs) to:

> provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, and improved predictability in governmental decisionmaking. Section 303(3).

Several states have developed SAMPs to fulfill these purposes, with different degrees of success. For example, the San Francisco Bay Conservation and Development Commission (BCDC), an autonomous segment of the California Coastal Management Program, has developed several SAMPs, including the San Francisco Bay Plan and the Suisun Marsh and Richardson Bay Special Areas Plans, to govern activities and uses affecting the resources of these areas. The San Francisco Bay Plan sets goals and priorities for all communities adjacent to the Bay and for state and federal agencies whose activities affect it. The Special Area Plans are concerned with major components of the Bay system, and are directed primarily at the activities of local communities (waste water treatment, runoff, dredging and filling activities, etc.) affecting specific areas. These plans were developed through a public process involving the participation of local and county governments, state and federal agencies,

private citizens and special interest organizations. Adoption of the plans required the approval of the BCDC which is made up of representatives from each of the local and county governments adjacent to San Francisco Bay.

Rhode Island has prepared a SAMP to protect and manage its coastal salt pond region. The many salt ponds along Rhode Island's coast attract thousands of visitors each year because of their scenic and recreational values. The ponds are intensively used by boaters, fishermen and swimmers, and they are also important habitats for fish and shellfish. The Rhode Island Salt Pond Region SAMP establishes basic policies to maintain the Region's scenic qualities, to control nearby development, and to create a management and permitting system appropriate to the Region's resources. The Rhode Island Salt Pond Region SAMP is the product of a long and successful effort involving local, state and federal officials, environmental organizations, experts and planners from the University of Rhode Island's Coastal Resources Center and the public.

One SAMP, for Grays Harbor, Washington, has been in development since the mid-1970s, and has not yet received final approval. The task for local, state and federal planners was to develop a comprehensive plan for an important port and estuary bordered by several small towns and cities in which there is a mixture of uses and resources that do not co-exist easily. Shipping and lumber interests desired land to expand their shoreside facilities. Environmentalists wished to protect natural areas for bird habitats. Local communities wanted a balance between growth and preservation. State and federal agencies (the Environmental Protection Agency, the U.S. Army Corps of Engineers, the Fish and Wildlife Service, and their state counterparts) were also deeply involved in plan development. Crucial to progress in establishing the Grays Harbor SAMP was the role of a negotiator to "broker" the bargaining among these disparate groups. Although a SAMP was eventually drafted, success may not yet be claimed, primarily because several local and national environmental groups have

refused to accept the compromise offered them, which requires the loss of a portion of a valuable bird habitat area and, in their view, allows too much development to occur in the estuary. They have legally challenged the adoption of the SAMP. Moreover, concern over the legally binding effect of a SAMP approved under the CZMA has discouraged the active participation of federal agencies afraid of losing authority to state and local governments.

SAMPs are a potentially valuable coastal resource management technique. They have been used successfully in several states, although the controversy surrounding the Grays Harbor plan has caused second thoughts about the costs and problems involved in their development and implementation.

Coastal Area Permit Programs

Coastal permit systems have proven very effective in states that have established statewide programs to regulate development in the coastal zone. The Washington program requires permits issued by local governments for development activities in the coastal zone. These permits are reviewed by the state coastal management agency and may be appealed by anyone, including the state government, to a hearing board. Issuance of these permits is governed by the statewide criteria and standards of the federally approved coastal management program.

The New Jersey Coastal Management Program issues three different permits governing development activities in its coastal zone. Major residential, industrial, sewer and energy projects require a permit under the Coastal Area Facility Review Act. Activities affecting wetlands require a permit under the State Wetlands Act. Construction in areas flooded by the mean high tide require a permit under the Waterfront Development Act.

The states usually regarded as having the strongest coastal permitting programs are California and North Carolina. Both states have comprehensive state coastal management acts authorizing the issuance of coastal development permits and providing well-developed criteria and standards to support a comprehensive permitting system. Eventually, with the development and approval of local government coastal plans, the California program will transfer its statewide permitting authority to local governments (similar to the Washington program). North Carolina already distinguishes between major and minor permits. Minor permits are issued by local and county governments for relatively smallscale projects. Major permits are required for activities which occur in specially designated areas (wetlands, estuarine waters and shorelines, beaches, dunes, drinking water aquifers, and certain natural areas). In both states, local permit decisions may be appealed to state coastal management commissions.

Generally speaking, coastal permitting systems have not operated to halt development in the coastal zone, except in certain discrete areas where development moratoria have been declared or all development is prohibited (wildlife preserves, threatened fishery habitats, etc.). A major purpose of a permitting system is to modify project proposals so that development consistent with coastal management policies may proceed. The results of several years of state program evaluation by the federal government confirm that no coastal permitting system has stopped development, although undoubtedly some costs have increased, at least marginally, and project time has stretched. On the other hand, state CM programs have tried with considerable success to streamline permitting procedures and have eliminated duplicative reviews and in some cases shortened review periods substantially. One of the major gaps in coastal management research in the United States is precisely the lack of good information on the effects of coastal permitting on development in the coastal zone.

Central to an effective coastal permitting system is an adequate project review process and follow-up monitoring and enforcement with appropriate sanctions for permit violations. These matters are discussed below.

Mitigation

All state programs either issuing coastal development permits or reviewing permits issued by other state or federal agencies for activities and projects affecting the coastal zone require mitigation of the adverse effects of such projects and activities in one way or another. Considered in this light, there is nothing extraordinary about this implementation technique. However, the term has acquired a special meaning in some states which have sought to institutionalize a particular form of "mitigation banking." In theory, the state will allow the destruction or use of certain coastal resources or values (e.g., wetlands dredged or filled to expand port facilities) if the developer restores or acquires an equivalent and corresponding coastal resource or value (e.g., wetlands restored or acquired). In some versions, a prospective developer might purchase mitigation units or credits from a "mitgation bank," and proceed with its project. The "bank" would apply the funds toward the restoration or acquisition of an equivalent resource or value. Controversy surrounds this form of mitigation. Issues include onsite versus offsite mitigation the problem of weighing equivalent resources, and answering the difficult questions involved in evaluating different resources.

Several states, notably Oregon, have considered and experimented with mitigation banks. Development interests favor them; environmentalists and planners remain skeptical, if not opposed. Mitigation banks have not yet proven to be an effective means to implement coastal management.

Critical Area Designations

Many states, especially those states with extensive coastal zones, have used critical area designations to carve out special management areas subject to controls that are not generally applicable in the coastal zone. For example, South Carolina's coastal zone includes eight coastal counties and a narrow band of "critical areas" containing resources of special significance: coastal waters, tidelands, beaches, and primary ocean-front sand dunes. Within such critical areas, the South Carolina Coastal Management Program exercises direct permitting authority over any land-disturbing activity.

Other states, such as Connecticut and Washington, distinguish between two "tiers" of coastal lands and waters. In Connecticut, the first tier consists of the state's territorial waters and extends inland to the limits of the 100-year coastal flood zone, or to a minimum of 1,000 feet landward of the mean high tide or the boundary of State regulated wetlands, whichever is farthest inland. Activities in this tier having a "direct and significant impact on coastal waters" are managed jointly by the State and coastal municipalities. The second tier includes land between the first tier boundary and the inland boundaries of the 36 coastal municipalities. Specified, major activities in this tier are managed by the State.

In addition, the CZMA requires that states designate specific areas "for the purpose of preserving or restoring them for their conservation, recreational, ecological or esthetic values" (section 306(c)(9)). In 1980, the CZMA was amended to encourage states to "[designate] areas that contain one or more coastal resources of national significance and [provide] specific and enforceable standards to protect such resources."[5] It is believed that all coastal states have, in some fashion and to some degree, designated special areas to preserve important resources and values. However, no study has yet been done of the states' compliance with these requirements of the CZMA,

although amendments to the Act in 1985 mandate that the federal government evaluate state program performance with respect to them.[6]

Land Acquisition

The purchase of land is authorized under two programs established by the CZMA: the National Estuarine Reserve Research System (NERRS)[7] and the Coastal Energy Impact Program (CEIP).[8] Federal funds provided by the CZMA to support state CM programs may not be used to purchase land.

Under the NERRS, federal funds have been used to provide one-half of the cost of estuarine areas bought by states for inclusion in federal-state estuarine reserves. These estuarine reserves are used primarily for estuarine research purposes, although substantial public information and education programs are also located at many sites. Sixteen reserves around the nation have been designated under this program.

Under the CEIP, federal funds were provided to coastal states to enable them to plan for and to mitigate the onshore effects of increased offshore energy development activities. Such funds could and were used to purchase land for parks and coastal recreational areas, public access to water, municipal facilities, etc. Congress has not funded the CEIP since 1981, and the authority to do so will lapse in 1988.

Land acquisition remains a viable CM technique at the federal level only as part of the NERRS. However, many states use substantial state funds to purchase coastal areas in order to preserve them or make them available for public access and use. The California Coastal Conservancy is a highly successful state agency whose purpose is to acquire, preserve, and restore ecologically valuable lands.

MONITORING AND ENFORCING COASTAL PERMITS

An effective permit monitoring and enforcement system serves two important purposes: (1) compliance with permit conditions is more likely if monitoring occurs regularly and if sanctions are enforced for violations; and (2) important feedback information is obtained regarding the usefulness of permit conditions. However, monitoring and enforcement activities are expensive and time-consuming, and state programs have limited funds and small staffs. Monitoring and enforcement activities are the weakest elements of many state coastal management programs.

North Carolina's permitting system includes the use of field offices and staff, frequent aerial surveillance and close cooperation with other State and federal permitting agencies to monitor permitted projects and activities. California has plans to implement a computerized permit information retrieval system to provide data on current permits. Field checks will be used to monitor major projects, and aerial surveillance will be directed at unpermitted activities. Permit violations are routinely referred to the State Attorney General's office and prosecutions have occurred.

ENVIRONMENTAL ASSESSMENT IN THE DECISIONMAKING PROCESS

The CZMA is intended to complement other federal and state laws, such as the National Environmental Policy Act and equivalent state environmental policy laws, which require assessing the environmental effects of proposed projects and activities on coastal resources, uses and values. Further, the CZMA encourages the coastal states to evaluate an activity or project affecting the coastal zone early in the decisionmaking process before the commitment of major resources to the project, and to inform the proponents of the project or activity in what manner it may be carried out in compliance with state coastal policies and standards. To accomplish this goal of early and comprehensive

environmental assessment of proposed projects, the coastal states have devised procedures involving cooperative federal/state/local review of such activities as major outer continental shelf energy projects (notably California) and joint federal/state permitting of minor dredging and filling activities (North Carolina and the Army Corps of Engineers).

State programs have generally recognized, especially with respect to large projects in or affecting the coastal zone, that staff planners and experts should advise prospective applicants for permits as early in the planning stages of the project as possible to avoid costly delays and to prevent conflicts. State programs for the most part encourage early consultation. The data and information respecting federally permitted activities for fiscal year 1983 contained in the draft Federal Consistency Study prepared by the National Oceanic and Atmospheric Administration amply demonstrate that state programs have been able to approve well over 90 percent of the projects proposed for state review.

PUBLIC EDUCATION

The CZMA requires public participation both in the development of state programs under the Act and in CM decisionmaking at the federal, state and local level. Consequently, public education in CM principles and techniques has been and remains a major task of state and local CM agencies.

All programs have engaged in activities designed to involve and educate the public in good CM practices. State agencies have established citizen advisory groups to participate in the planning of state and local programs and to oversee their implementation. They have also prepared a variety of educational materials for public distribution, including materials for use in CM courses suitable for public schools. Many states stage special events such as Coast Week to highlight CM accomplishments and activities. A significant result of

such public education efforts has been an increase in public support for CM goals and programs throughout the U.S.

Appendix A

SUMMARIES OF SELECTED STATE PROGRAMS

Summaries of state programs in the United States are provided below to exemplify the diversity of the U.S. CM experience.

Hawaii

The Hawaii Coastal Zone Management Program (HCZMP) was approved in 1978 by the federal government. The Hawaii Coastal Zone Management Act (HCZMA) establishes the following basic state objectives to guide state and local government actions affecting the resources and uses of the coastal zone:

1. provide for and protect recreational resources;
2. protect and restore historic and cultural resources;
3. improve scenic and open space areas;
4. protect coastal ecosystems;
5. provide for coastal-dependent economic uses;
6. reduce coastal hazards;
7. improve the process for managing development; and
8. provide for public participation.

These seven basic objectives and their associated policies are implemented through a network of existing legal authorities administered by the four county governments and a number of state agencies. The network consists of 46 state laws, various state regulations, and county ordinances and regulations. Although responsibilities and authorities related to administering the HCZMP are shared by the network of state and local government agencies, the

Department of Planning and Economic Development has been designated as the lead agency for implementing the state program.

Hawaii's coastal zone includes the state's waters, the Special Management Areas (SMAs) around the shoreline of each island, and all the remaining land areas except the state forest reserves. In the SMAs, the local governments administer a comprehensive permit system regulating development activities using an additional set of guidelines applicable only within the SMA. The guidelines for the review of development proposals in the SMAs are designed to ensure adequate access to publicly owned or used beaches, restoration areas and natural reserves; include provisions governing solid waste treatment to minimize the adverse impact upon SMA resources; provide for minimum alteration of land forms and vegetation; and require the consideration of public health and safety factors as well as adverse environmental and ecological impacts. The guidelines seek to minimize dredging, filling or other alterations of any bay, estuary, salt marsh, river mouth, slough or lagoon; loss of beach areas; restrictions upon public access to tidal and submerged lands; interference or detraction from the line of sight toward the sea from the state highway nearest the coast; and adverse effects on water quality, existing or potential fisheries, fishing grounds and wildlife habitats.

Areas of Particular Concern (APCs) have been designated in the coastal zone. The Natural Area Reserve System (NARS), the Marine Life Conservation Districts (MLCDs), the entire shoreline setback area and other areas are subject to special attention as APCs. The NARS was established by the legislature to protect unique geologic, volcanic and other natural areas with distinctive marine, animal and terrestrial features from loss due to growing population and increasing development activities. MLCDs were established to preserve unique areas of Hawaii's marine environment such as bays, shoals and estuaries that are vulnerable to loss.

The HCZMP is supported and advised by the members of the statewide Advisory Committee including representatives from interest groups as well as state and local government agencies.

The HCZMP permits any person to bring a civil suit against any agency for its actions within a SMA or affecting state waters that are not in compliance with the HCZMA's objectives, policies or guidelines. The HCZMA also allows private citizens to bring suits compelling state and local government agencies to perform their duties under the Act.

The Commonwealth of the Northern Mariana Islands

The Coastal Resources Management Program (CRMP) which was approved by the federal government in 1980 provides for the management of the land and water resources of the Northern Mariana Islands (NMI). The areas subject to the CRMP include the entire land area comprising the 14-island archipelago and the territorial waters surrounding each island. The CRMP establishes an overall strategy for managing development activities and protecting coastal resources in the NMI by identifying areas and activities subject to the coastal permitting program administered by the Coastal Resources Management Office (CRMO) within the governor's executive office. The CRMO is responsible for implementing the CRMP, reviewing the coastal permitting decisions of NMI agencies for compliance with CRMP policies and determining the consistency of federal activities affecting the commonwealth's coastal zone. Formerly, the functions and duties of this office were set forth in an Executive Order issued by the governor and approved by the federal government as the basis for the NMI CRMP. The policies established by this Executive Order were codified by the NMI legislature in 1983 in the Coastal Resource Management Act.

The CRMP permit is the principal mechanism through which the program's management strategies are implemented. A coastal permit, issued by the CRMO, is required for any proposed project which is located in an Area of Particular Concern (APC), which is a major facility siting as defined by the CRMP regulations, or which requires a federal license or permit or other federal authorization. Four categories of APCs have been established where all activities are subject to the policies of the CRMP and require a CRMO permit. The APCs and the lead NMI agency for permit review in each APC are identified as follows:

1. Shoreline APC - the area extending inland 150 feet from mean high water. Lead agency - Department of Commerce and Labor (DCL);
2. Lagoon and Reef APC - the area extending seaward from the mean high water to the outer slope of the barrier or fringing reef. Lead agency - Department of Natural Resources (DNR).
3. Wetland and Mangrove APC - the area which is permanently or periodically inundated and within which are found certain species of dominant wetlands or mangrove vegetation as shown on official APC maps on file at the CRMO. Lead agency - DNR.
4. Port and Industrial APC - the land and water area surrounding the commerical ports of Saipan, Tinian and Rota as shown on official APC maps on file at the CRMO. Lead Agency - DCL.

As a result of the legislation passed in 1983, permit decisions by the CRMO are subject to appeal to the CRMP Appeals Board.

Florida

Although the Florida Coastal Management Program (FCMP) is established by the Florida Coastal Management Act, the program is based upon a networking of existing state authorities dealing with regional planning councils, coastal

hazards and disaster preparedness, submerged lands, areas of special concern, beach and shore preservation, and air and water pollution control.

The FCMP is implemented through nine state agencies, with the primary responsibility for the program in the Department of Environmental Regulation (DER), which coordinates and monitors the implementation of the authorities which make up the FCMP. Regional and local units of government implement portions of the FCMP when authorized by state law. Regional Planning Councils and Water Management Districts take the lead role in reviewing developments of regional impact and the management of water supply issues. Local governments may be delegated certain regulatory functions concerning coastal construction and pollution control by the state, and participate in reviewing developments og regional impact and all development in Areas of Critical State Concern. Local governments eligible to receive coastal management funds are limited to those Gulf and Atlantic coastal cities and counties which include or are contiguous to state waters where marine species of vegetation constitute the dominant community.

Sixty-eight specific areas of the state have been designated as Geographic Areas of Particular Concern. These areas have been selected under four state special area management programs: the Aquatic Preserve System, the state Widerness System, the Areas of Critical State Concern Program, and the Conservation and Recreation Lands Program.

The organizational framework of the FCMP is established in two Joint Resolutions issued by the governor and state cabinet and four Memoranda of Understanding signed by the major state agencies networked into the FCMP. These documents provide for the creation of the Interagency Management Committee, procedural rules and specific procedures for coordinating certain State programs. The Interagency Management Committee is responsible for

identifying issues that cut across agency jurisdictional lines and developing recommendations which address these issues.

The Coastal Advisory Committee established by the governor provides for public involvement in the FCMP. The Committee consists of persons representing government, industry and environmental interests, and come from all regions of the state. Members serve two year terms. The Committee advises the major state agencies making up the FCMP on all matters related to coastal management in the state.

The FCMP identifies ten "issues of special focus" organized into three broad areas: resource protection, coastal development and coastal storm hazards. These issues are intended to provide focus for the future development of the FCMP. Environmental and management concerns are enumerated for each issue and recommendations are made for future actions by the state in carrying out the FCMP.

Puerto Rico

The Puerto Rico Coastal Management Program (PRCMP) is adminstered by two principal commonwealth agencies - the Department of Natural Resources (DNR) and the Planning Board (PB) in the governor's executive office. The DNR is responsible for the granting of mining concessions and franchises for the use of surface and ground waters, the management of coastal waters and submerged lands, the management of forests and the regulation of sand extraction, hunting and fishing. The PB has broad regulatory and planning authority over land uses in the commonwealth. The PB controls all uses of publicly owned lands along the shoreline, and has regulatory authority over all major activities in the coastal zone through its general controls over subdivisions, residential and agricultural uses, industrial projects, commercial activities and tourism. Two other agencies have responsibilities for implementing the PRCMP: the

Environmental Quality Board which administers the preparation of environmental impact statements and adopts and reviews pollution control standards and regulations, and the Regulations and Permits Administration which issues building and use permits and monitors individual projects after approval by the PB.

In developing the PRCMP, the following program elements were adopted:

1. New policies to protect mangrove wetlands, to provide beach access and to provide for coastal-dependent development;
2. New criteria on diking, filling and dredging activities;
3. Designation of all mangrove wetlands and seven additional areas as Special Planning Areas for which management plans are to be developed to resolve use conflicts and which are to receive priority in the allocation of departmental review and monitoring resources; and
4. Identification of 26 areas recommended as Natural Reserves for preservation and restoration.

The PRCMP identifies the following general tasks and goals:

1. Refinement of regulations and criteria related to runoff and erosion control, shorefront community facilities, access dedication requirements and floodprone areas;
2. Improved field and enforcement services;
3. Establishment of a system of Natural Reserves;
4. Development of hazards management plans;
5. Development of Special Planning Area management plans;
6. Clarification of public proterty rights in coastal resources;
7. Regulation of coral and sand extraction activities;
8. Settlement of problems related to "squatters" on public lands;
9. Protection of archeological sites;

10. Updating oil spill contingency plans;

11. Carrying out feasibility studies on alternative sources of sand for construction; and

12. Development of policies on erosion hazards, beach access and geologic hazards; inventorying coastal hazards and coral reefs; and the provision of field activities in an important island forest area.

North Carolina

The North Carolina Coastal Management Program (NCCMP) was approved in 1978. The major legislative authority of the NCCMP is the Coastal Area Management Act (CAMA), which designated the Department of Natural Resources and Community Development (DNRCD) as the agency responsible for coastal management in the state. Under CAMA, the DNRCD administers a coastal area permitting system covering all major development activities in the state's coastal zone, including the issuance of dredge and fill permits under state law. The CAMA also provides that DNRCD shall review all local ordinances and regulations for compliance with the guidelines and standards established under the Act. The CAMA established the Coastal Resources Commission (CRC), composed of 15 members appointed by the governor to represent certain coastal interests: commercial fishing, wildlife, recreational fishing, marine ecology, coastal agriculture, coastal forestry, coastal land development, marine-related business, engineering, state and national conservation organizations, financial institutions and local governments. The CRC is responsible for the development of policies and state guidelines for the designation and regulation of Areas of Environmental Concern (AECs) and the establishment of state guidelines for local land use planning in the coastal areas. The CRC is also responsible for initiating action on new coastal resource management issues.

The basis goals of the NCCMP are:

1. To provide a managment system capable of preserving and managing the natural ecological conditions of the estuarine system, the barrier dune system and beaches to preserve and perpetuate their natural productivity and their biological, economic and esthetic values;
2. To ensure that the development or preservation of the land and water resources of the coastal area proceeds in a manner consistent with ecological considerations;
3. To ensure the orderly and balanced use and preservation of coastal resources on behalf of the people of the state and the nation; and
4. To establish policies, guidelines and standards for the protection, preservation and conservation of natural resources; the economic development of the coastal area; recreation, tourist facilities and parklands; transportation; the preservation and enhancement of historic, cultural and scientific aspects of the coastal area; and the protection of common law and statutory rights in the lands and waters of the coastal area.

The NCCMP uses a two-tier approach to manage the state's coastal resources. The AECs comprise the first tier and activities in these areas are regulated by CAMA permits. The designated AECs include coastal wetlands, estuarine waters, public trust areas, estuarine shorelines, ocean beaches, frontal dunes, ocean erosion areas, inlet lands, small surface water supply watersheds, public water supply wellfields and certain fragile natural resource areas. The second tier includes all areas outside the SECs that lie within the 20 coastal counties. These lands are managed through other state laws and the CRC-approved local Land Use Plans (LUPs). The NCCMP's objectives and management approach encompass four major activities: permitting activities,

development of LUPs, financial and technical assistance to local governments and CRC policy formulation.

Connecticut

The Connecticut Coastal Management Program (CCMP) was approved in 1980. The Connecticut Coastal Management Act (CCMA) establishes a comprehensive coastal resource management program, and networks several other major state laws to provide the legal basis for the program. Under the CCMA, responsibility for implementing the CCMP is shared among agencies at the state and local levels. The Department of Environmental Protection (DEP) is the lead agency and is responsible for monitoring, evaluating and coordinating overall implementation of the program. Further, the DEP is the primary state permitting agency for private and public coastal development activities and determines the consistency of federal activities.

The policies of the CCMP guide the activities of state and local governments and agencies for uses and activities subject to the CCMP. These policies concern:

1. Coastal land and water resources - policies for activities on rocky shorefronts, beaches and dunes, intertidal flats,tidal wetlands, freshwater wetlands, hazard areas, developed shorefronts, islands and other coastal areas;
2. Coastal uses - policies concerning general development activities, water dependent uses, ports and harbors, dredging, fisheries and other coastal activities; and
3. Government activities - policies on coordinating and planning regulatory activities, consistency of state programs, policies, expenditures and related matters.

The area subject to the CCMP is divided into two tiers. Within the first tier, all major uses, activities and resources which could have an effect on coastal waters are managed jointly by the state and the local coastal governments. Within the second tier, only certain major uses and activities have been identified as potentially affecting coastal waters and are managed by the state.

Local governments have two major responsibilities under the CCMP: administration of the Coastal Site Plan Review and preparation of voluntary Municipal Coastal Programs. The CCMA requires that local governments review coastal site plans for proposed development projects under their regulatory jurisdiction to determine the consistency of the proposed activity with the policies of the Act and to evaluate the effects of the proposed project on coastal resources and on other possible water dependent uses of the site. Local agencies which fail to adhere to the policies of the CCMP are subject to legal action by the DEP, the proponents of the project and other aggrieved parties. The DEP is required to monitor and evaluate the activities of local governments to ensure compliance with the Act. Local coastal governments may prepare and adopt comprehensive Municipal Coastal Programs in order to improve their capability to coordinate long-range planning and management of their coastal resources. The DEP provides financial and technical assistance for the development of local coastal programs.

Rhode Island

The Rhode Island Coastal Resources Management Program (RICRMP) was approved in 1978. The governor's office is designated as the agency for receiving and administering federal assistance under the CZMA and for coordinating activities affecting state coastal resources. The Coastal Resources Management Council (CRMC) established under state law is the principal body responsible for managing state coastal resources and implementing the RICRMP. The CRMC is

composed of 17 members appointed by the governor, the lieutenant governor, and the speaker of the house, and includes at least four local officials from coastal communities. The CRMC has direct permitting authority over all activities in state waters, its coastal wetlands and on adjacent shorelands that are likely to affect significantly the shore or tidal waters.

CRMC staff consists of an executive director, a chief of coastal resources, an administrative officer, two biologists, two engineers, an enforcement coordinator, draftsman and clerical staff.

CRMC's jurisdiction covers the area extending from the seaward limits of the territorial sea three miles offshore to two hundred feet inland from the mean high water mark, with some additional areas. Physical features such as coastal beaches and dunes, barrier beaches, coastal wetlands, cliffs, bluffs and banks, rocky shores and manmade shorelines all have an extended contiguous area of two hundred feet from their inland border which is under the authority of the CRMC. Cultural features of historical or archeological significance are also within the jurisdiction of the CRMC.

Furthermore, subdivisions of six or more units and parking areas of one acre or more, any portion of which extends onto a shoreline feature or its contiguous area, or which are in the watershed of a poorly flushed estuary must have the CRMC's approval. A variety of industrial activities which take place inland but which may affect the environment of the coastal region also require assents from the CRMC. Additionally, the CRMC has the responsibility for regulating pollution caused by urban development, including stormwater and municipal and industrial wastewater discharges.

Several important changes took place after 1978 which made it necessary to review the RICRMP and to develop methods with which to address the specific problems faced in different parts of the coast in the 1980s. As a result,

specific policies have been adopted for 30 different development activities and 10 different coastal environments. In addition, citizens, public officials and the business community expressed concern over the south shore coastal ponds, threatened by development, and Providence Harbor, suffering from deterioration. Special area plans were adopted in 1983 for Providence Harbor and in 1984 for the Salt Pond Region. Portions of a plan for Newport Harbor were also adopted in 1984. A special area plan for the Narrow River, a shallow estuary bordered by three towns, was adopted in 1986. Several communities have already changed local land use zoning and plans to implement the special area plan.

Appendix B

A SAMPLING OF STATE COASTAL MANAGEMENT PROJECTS

Short descriptions of successful CM projects compiled by the Coastal States Organization and included in the 1985 hearing record of the reauthorization of the CZMA are listed below.

Protecting Coastal Resources

A number of states and territories, including Maine, Massachusetts, Rhode Island, Connecticut, New York, South Carolina, Florida, Oregon, California and the Virgin Islands, use CM funds to develop emergency contingency plans in the event of an accidental oil spill. Prepared with the help of industry, these plans assist cleanup crews in identifying those natural resources which are most sensitive to spills and recommend methods for deploying protective equipment on a coast-wide, site-specific basis.

Minimizing Coastal Hazards

New York relied on joint CM and state funds to establish a state-of-the-art Tidal Gauge System that enables ship and barge operators in New York Harbor and along the Hudson River to increase cargo loads, reduce vessel layover time and avoid accidents. The first of its kind in the country, the system provides subscribers linked by telephone lines with accurate and timely data on tidal levels critical to port users. New York estimates that the system will save the state's shipping industry at least several million dollars annually by reducing a ship's waiting time to unload cargo and by decreasing the need to transfer cargo to smaller vessels.

Public Access

Rhode Island, Connecticut, South Carolina and Michigan have used federal funds to construct accessways to beaches and to build boat launching facilities for public use.

Managing Living Marine Resources

South Carolina mapped oyster grounds and for the first time since 1897 was able to identify oyster quality and quantity in state waters. To boost shellfish production, the state also developed a mechanical oyster harvester and helped transfer thousands of bushels of seed oysters from polluted oceanbeds to cleaner waters.

Preserving Coastal-Dependent Uses

New York used coastal zone management funds to finance a feasibility study for a new fishery processing and distribution center. On the basis of the study the Port Authority of New York and New Jersey invested $27 million toward its construction. The new Brooklyn Fishport, which opened in 1984, now serves as the base for commercial fishing boats, processing, distribution and warehouse facilities and has created 3,000 new jobs within the coastal zone. It generates $9 million in local and state tax revenues annually.

Redeveloping Urban Waterfronts and Ports

To promote tourism, Michigan encouraged redevelopment of abandoned riverfront and lakeshore areas by packaging development sites, increasing the marketability of industrial riverfront corridors through inexpensive esthetic improvements, and building walkways along historical canal locks at Sault Ste. Marie.

Siting Major Facilities in the Coastal Zone

After assessing the demand for different types of offshore energy platforms in California and Alaska, Washington used coastal managment funds to evaluate 17 state ports for their suitability as future platform construction sites. This effort helped local industry meet federal and state regulatory and environmental impact requirements by providing advance notice of the availability of alternative construction sites.

Promoting Coastal Development

Maine estimates that for every federal coastal dollar invested by the state, $9 in private, state and local funds has been generated for capital investment and for such projects as pier rehabilitation and fish and cargo port construction. Maine has prepared a detailed investment strategy to help guide long-term private and public investment along its coast.

NOTES

1. 16 U.S.C. 1451 et seq.
2. CZMA, section 303(2).
3. CZMA, section 306(e).
4. Marine sanctuaries are areas of ocean and coastal waters designated by the Secretary of Commerce to protect their special and nationally significant natural values under the Marine Sanctuaries Act (16 U.S.C. 1431 et seq.).
5. CZMA, section 306(i).
6. CZMA, section 312(c)(2).
7. CZMA, section 315.
8. CZMA, section 308.

SOURCES

The primary sources for the information contained in this report are:

1. The program documents developed and approved under the CZMA for each coastal state and territory. Copies of program documents may be obtained from each state agency or the Office of Ocean and Coastal Resource Management (OCRM), National Oceanic and Atmospheric Administration, U.S. Department of Commerce, 1825 Connecticut Avenue NW, Washington, D.C. 20235. Addresses for state CM programs may also be obtained from OCRM; and

2. Periodic evaluation reports on state CM programs prepared by and available from OCRM at its address listed above.

For further discussion and analysis of coastal management in the United States, see:

1. Godschalk and Cousins, eds.,"Coastal Management: Planning on the Edge", 51 Journal of the American Planning Association 263-336 (1985); and

2. Brower and Carol, "Coastal Zone Management as Land Planning", National Planning Association Report #205, 49 pp. (1984).