
Appendix A

SURVEY OF MAINE'S LAWS RELEVANT TO ACCELERATED SEA-LEVEL RISE

Maine's laws contain several provisions that address the possibility of a change in shoreline position. While some of these provisions may have been adopted primarily in anticipation of continued land subsidence rather than in specific response to the threat of accelerated sea-level rise due to global climate change, they will be applicable regardless of the cause of the change. The following appendix analyzes each law according to the following format:

1. Summary of law in general;
2. Identification of portion of the law that relates to sea-level rise;
3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise;
4. Analysis of extent to which accelerated sea-level rise might affect the application of the law.

The policy implications and recommendations based on this analysis are discussed in more detail in Chapter Five of this report. Within this Appendix, the laws are reviewed in the following order:

- A. Natural Resource Protection Act and Sand Dune Regulations;
- B. Coastal Management Policies Act;
- C. Growth Management Act;
- D. Shoreland Zoning Act;

- E. Site Location of Development Act;
- F. Subdivision Law;
- G. State Floodplain Management Program;
- H. Submerged Lands Act; and
- I. Coastal Barrier Resources System.

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| <p>A. NATURAL RESOURCES PROTECTION ACT (38 MRSA §§ 480-A -U)</p> |
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1. Summary of law in general

The Natural Resources Protection Act is designed to protect the State's rivers, streams, great ponds, fragile mountain areas, freshwater wetlands, significant wildlife habitat, coastal wetlands and coastal sand dune systems from degradation. It promotes research and management programs for these protected natural resources. The Act also establishes a permit system for all activities in, on, or over any protected natural resource, and for all activities on land adjacent to any freshwater or coastal wetland, great pond, river, stream or brook if the proposed activity would operate in such a manner that material or soil may be washed into them.

Unless otherwise specifically exempt in §480-Q of the Act, activities requiring a permit

are:

- dredging, bulldozing, removing or displacing soil, sand, vegetation or other materials;
- draining or dewatering;
- filling, including adding sand or other material to a sand dune; or
- any construction, repair or alteration of any permanent structures.¹

The Act is administered by the Department of Environmental Protection.

2. Identification of portion of the law that relates to sea-level rise

The Act defines significant wildlife habitat, coastal wetlands and coastal sand dune systems as three of the protected natural resources. Significant wildlife habitat is further defined to include specific types of areas, including habitat for officially listed endangered or threatened species; critical spawning and nursery areas for Atlantic sea run salmon; shorebird nesting, feeding and staging areas; and seabird nesting islands. However, this habitat is only protected by the Act if this significant wildlife habitat has been mapped by the Department of Inland Fisheries and Wildlife. To date, only a portion of these areas have been mapped, greatly reducing the degree of protection.

The coastal wetlands and sand dune systems protections are somewhat stronger. Coastal wetlands are defined as "all tidal and subtidal lands, including all areas below any identifiable debris line left by tidal action; all areas with vegetation present that is tolerant of salt water and occurs primarily in a salt water or estuarine habitat; and any swamp, marsh, bog, beach, flat or other contiguous lowland which is subject to tidal action during the maximum spring tide level as identified in tide tables published by the National Ocean Service."² The Act specifies that coastal wetlands may include portions of coastal sand dunes.

Coastal sand dune systems are defined as "sand deposits within a marine beach system,

including, but not limited to, beach berms, frontal dunes, dune ridges, back dunes and other sand areas deposited by wave or wind action."³ They may extend into coastal wetlands.

Both of these protected resources are defined in such a way that the definition of the area regulated will fluctuate as the shoreline changes in response to global climate change or land subsidence.

For those activities that do require a permit, the Act establishes statutory standards for review. The Department is directed to grant a permit upon such terms as are necessary to fulfill the purposes of the Act if the applicant can demonstrate that the proposed activity meets those standards. The application of these standards is further detailed by regulations.

The standards most applicable to shoreline activities and sea-level rise are as follows:

- **2) Soil erosion.** The activity will not cause unreasonable erosion of soil or sediment nor unreasonably inhibit the natural transfer of soil from the terrestrial to the marine or freshwater environment.
- **3) Harm to habitats; fisheries.** The activity will not unreasonably harm any significant wildlife habitat, ... aquatic habitat, ... estuarine or marine fisheries or other aquatic life....
- **4) Interfere with natural water flow.** The activity will not unreasonably interfere with the natural flow of any surface or subsurface waters.
- **6) Flooding.** The activity will not unreasonably cause or increase the flooding of the alteration area or adjacent properties.
- **7) Sand supply.** If the activity is on or adjacent to a sand dune, it will not unreasonably interfere with the natural supply or movement of sand within or to the sand dune system or unreasonably increase the erosion hazard to the sand dune system.

The Act contains a list of specified activities for which a permit is not required. The most

critical exception, enacted in July 1993 as part of the general budget act,⁴ amended the list of activities for which a permit is not required to add "alterations in back dunes of coastal sand dune systems" except if the site is subject to flooding during a 100-year flood event based on information from the Federal Emergency Management Agency. The applicant had to provide the DEP with a location map and notice 14 days in advance of the proposed activity prior to commencing work in the back dune area.

This 1993 exemption was criticized as being overly-broad. In many sand beach areas, the historical primary dune no longer exists; proposed development on the front tier of the beach would actually involve development of what is technically a back dune area. Yet, these back dune areas are likely to be as threatened by accelerated sea-level rise as frontal dunes. In response to these criticisms, NRPA was again amended in 1994 to limit the exemption for back dune sites to only if the site is not expected to be damaged due to shoreline change within 100 years based on historic and projected trends. The entire permit exemption for back dunes is repealed as of February 15, 1995, to be replaced by permit-by-rule performance standards.⁵

Other more general exceptions may also become important if owners try to repair and maintain structures and infrastructure in the face of rising sea level. Some of these activities which do not require a permit include maintenance and "minor repair" of structures *above the high water line* causing no additional intrusion of an existing structure into a protected resource; repair, maintenance or replacement of an existing road culvert meeting size limits; emergency repair or normal maintenance and repair of existing public works which affect any protected natural resource, so long as it does not result in additional intrusion into the protected resource; and maintenance, repair or reconstruction of existing access ways in coastal wetlands to residential dwellings as long as the access way, if in a coastal wetland, is traditionally dry at mean high tide.⁶

The NRPA regulations include Coastal Sand Dune Rules.⁷ These rules are designed to guide

the application of the standards requiring that development in, on, or over sand dune systems must not cause unreasonable soil erosion, must not inhibit the natural transfer of soil from the terrestrial to the marine environment, and must not unreasonably interfere with the natural flow of any surface or subsurface waters. The Rules require the Department to consider impacts which may reasonably be expected to occur during the following 100 years; projects will not be permitted if, within 100 years, the project may reasonably be expected to be damaged as a result of changes in the shoreline, including changes from sea-level rise.

The Sand Dune Rules establish a policy of mobility or retreat in the face of a migrating coastal system. If a building sustains damage to the extent of 50% or more of the building's appraised value, it may not be repaired or rebuilt without a permit; no permit will be granted for its reconstruction unless the applicant can meet all of the requirements for new construction. It is highly unlikely that the owner of a structure damaged to this extent would be able to secure a permit to repair or rebuild.

The regulations allow permits to be granted, whether for new or replacement structures, subject to the condition that the structure (and related facilities) must be removed in the event that the shoreline recedes so that parts of the structure are within the coastal wetland for 6 months or more. In that event, the site must be restored to its natural condition. The rules also prohibit the construction of new seawalls in or on any sand dune system, and limit the repair or maintenance of existing seawalls. Finally, new buildings greater than 35 feet in height or covering a ground area greater than 2,500 square feet will only be allowed if the applicant can demonstrate the site will remain stable, assuming a three foot rise in sea level over 100 years.

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

NRPA, as implemented through the Coastal Sand Dune Rules, directly addresses sea-level rise. For coastal sand dune areas, it establishes a

policy of restrictions on the size and intensity of development in hazardous areas, and allows development of smaller structures subject to the requirements of retreat if the shoreline position changes so that the structure would interfere with natural sand dune processes.

The mobility or retreat policy is not geared to any particular assumption about the rate of change in shoreline position; since this policy operates after-the-fact to require removal of damaged structures, it is sufficiently flexible to respond to any rate of change.

In reviewing applications for new or substantially rebuilt structures, the Rules require an assessment of whether the proposed activity may reasonably be expected to be free from damage as a result of changes in the shoreline, including changes from sea-level rise, over the next 100 years. However, the Rules give no specific guidance on what assumption reviewers should use for the rate of change in shoreline position. These assessments usually assume a continuation of historical rates of change, based on the assumption that if this rate proves to be too low, the structures are small enough to be moved pursuant to the retreat requirements. If the State wants to minimize reliance on the retreat option (e.g., prohibit development in the first place) additional guidance would be required to direct reviewers to assume an accelerated rate of shoreline change.

In contrast, the Rules governing construction of larger structures in threatened areas do assume a specific rate of shoreline change which takes into consideration an accelerated rise in sea level. An applicant to build these larger structures must prove that the site will be stable given a sea-level rise of three feet over the next century. This generally conforms to an assumed global scenario of a 100 cm rise in sea level over the next 100 years.

These Sand Dune Rules and the explicit policy of retreat apply only to a very small, but intensely developed, portion of Maine's coast. The other types of coastline are generally subject to NRPA standards and specific regulations on soil erosion and the like. These standards provide, in a much less detailed way, for consider-

ation of non-interference with the transfer of soil from the terrestrial to the marine environment. But in non-sand dune settings, there appears to be less express consideration of a change in shoreline position and there are no rules parallel to the Sand Dune Rules which detail explicit policies of retreat or migration.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law.

The NRPA standards are sufficiently flexible to respond to accelerated sea-level rise without requiring a statutory change. The Rules require consideration of sea-level rise. If sea-level rise accelerates or if the Board is more confident about projections of a certain rate of change which exceeds historical rates, these can be used in permit reviews without any statutory amendments.

B. COASTAL MANAGEMENT POLICIES ACT (38 MRSA §§ 1801-03)

1. Summary of law in general

This 1986 law is a statement of legislative policy and intent with respect to state and local actions affecting the Maine coast. It acknowledges that there are increasing use conflicts and increasing development pressures on the coastal region. In an effort to reach a well-reasoned balance among the competing uses, it establishes nine policies and directs that state and local agencies and certain federal agencies with responsibility for regulating, planning, developing or managing coastal resources conduct their activities in a way which is consistent with the nine policies.

No procedures for implementation are adopted in the Act, nor have any regulations been promulgated. The Coastal Advisory Committee issued guidelines in December, 1986 to assist state agencies in implementing the policies. To date, implementation of the policies has been uneven among the affected agencies.

2. Identification of portion of the law that relates to sea-level rise

Eight of the nine policies articulate the need to promote ports and harbors for fishing, transportation and recreation; to manage marine resources to preserve the integrity of communities and habitats; to manage the shoreline to give preference to water-dependent uses and to promote public access; to protect critical habitat and natural areas; and to maintain the quality of fresh, marine and estuarine waters.

The remaining policy specifically addresses sea-level rise. It establishes a policy that municipalities are to discourage growth and new development in coastal areas where it would be hazardous to human health and safety as a result of natural forces including sea-level rise. Specifically, Policy Four states:

Hazard area development. Discourage growth and new development in coastal areas where, because of coastal storms, flooding, landslides or sea-level rise, it is hazardous to human health and safety.

The Guidelines for Policy Four⁸ present the rationale for the policy, noting that coastal floodplains, sand dunes and wetlands in their natural state provide storm protection and support a variety of important plants and wildlife. Citing the extensive damage to natural and man-made features visited by coastal storms and the direct and indirect costs to governments of repairing this damage, they establish an objective of discouraging development and redevelopment in areas that present threats to public safety or that threaten property damage which will be costly to public entities.

The implementation procedures recommend that affected agencies take the following steps:

- Government agency decisions will not support new infrastructure or related facilities in hazardous areas;
- Public funds available for improvements, renovations, or repair to existing infrastructure or other public facilities in hazard areas

will give priority to their relocation out of hazardous areas.

- Government agencies will require new and modified structures/facilities to be adequately setback to protect them from erosion for 100 years.
- Government agencies will include scientific projections of sea-level rise in regulatory and management decisions affecting the shoreline.⁹

Each state agency was required by Executive Order to examine all their programs affecting the coast and, by July 1, 1987 to identify changes necessary to make them consistent with the policies. The proposed changes were to be reviewed by the Coastal Advisory Committee and were then to be incorporated into State programs before December 31, 1987.

Some agencies have made significant progress. For example, work done includes computerized hazard mapping of certain coastal areas, adoption of revised coastal sand dune regulations, and work on flood prevention. Other agencies such as the Bureau of Public Lands have incorporated the policies by reference into laws affecting coastal areas. However, implementation of Policy Four, as well as the others, has not been systematic.¹⁰ The State has not yet adopted a Coastal Action Plan for the 1990s, one component of which would address sea-level rise and its implications for shoreline use, as recommended by the State Planning Office.¹¹

By the same Executive Order, federal and local agencies were encouraged to review their programs for compliance with these Coastal Management Policies. As applied to municipalities, this recommendation was strengthened into a requirement through the Growth Management Act and the Shoreland Zoning Act, both of which required the resulting comprehensive plans, comprehensive land use ordinances and shoreland zoning ordinances to "address" these Coastal Management Policies.¹²

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

The Coastal Management Policies are very general so they do not distinguish between hazards posed by sea-level rise caused by subsidence and sea-level rise caused by global climate change. Regardless of the specific source of the hazard, growth and new development is to be discouraged in areas threatened by these natural erosive processes.

As a general statement, Policy Four and the Guidelines, are sound as far as they go and provide an already established framework for considering the possible threats posed by accelerated sea-level rise. The Act, however, relies on essentially voluntary implementation by affected local, state and federal agencies. Some agencies, such as the Maine Geological Survey, have taken the lead in translating these general statements into concrete regulations. Others have not been aggressive in integrating these coastal management policies into their daily functioning. So despite the mandate that all agencies act in ways consistent with these policies, in the absence of any enforcement provisions or concerted executive department leadership to secure compliance, they are not proving adequate to the task of producing coordinated, multi-agency efforts to implement the policies.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

Due to the general phrasing of the Act, accelerated sea-level rise will not affect the actual application of the law. It does, however, broaden the range of variables to be considered in planning to manage hazard area development.

C. GROWTH MANAGEMENT ACT (Comprehensive Planning and Land Use Regulation Act, 30-A MRSA §§4311-4344)

1. Summary of law in general

The purpose of the Growth Management Act is to encourage municipalities to prepare comprehensive plans and to adopt implementing land use

ordinances to manage growth so as to protect the integrity of the natural resource base, to control the costs of providing necessary public services, to safeguard the long-term economic viability of the State's economy, and to protect the quality of life. To provide an overall direction and consistency, the Act establishes ten State growth management goals which are to be furthered by the individual growth management efforts of each municipality. In addition, the Act requires that the comprehensive plans of coastal municipalities also address nine coastal management policies contained in the Coastal Management Policies Act. The Act is administered by the Department of Economic and Community Development in coordination with individual municipalities.

The Growth Management Act defines the elements of a comprehensive plan and implementation program and sets up a system of financial and technical assistance to towns to comply with its mandate. The Act as originally passed established a schedule for municipal plan completion ranging from January 1, 1991 through 1996. However, due to budgetary constraints, that portion of the Act was repealed in December 1991. While comprehensive plans are now voluntary, pursuant to March 1992 amendments, if a municipality (excluding those in unincorporated areas) fails to adopt a comprehensive plan consistent with the Growth Management Act by January 1, 2003 (January 1, 1998 if it has received both planning and implementation grants) it will lose its right to enforce any land use ordinance except minimum shoreland zoning. Adoption of a comprehensive plan which is certified by the State as consistent with the Act also gives a municipality preference for receiving certain State aid, grants and assistance funds.

This Act reflects an underlying policy that "the most effective land use planning can only occur at the local level of government and comprehensive plans and land use ordinances developed and implemented at the local level are the key in planning for Maine's future."¹³ The goals and policies identified in the Act are important to unify the plans so that the multiple local efforts coalesce to accomplish consistent ends.

2. Portion of the law relevant to sea-level rise

The Growth Management Act is most relevant to sea-level rise through the goals to be addressed in comprehensive plans and implementing ordinances. The ten goals statements establish some general goals including to develop an efficient system of public facilities; to protect the quality of water resources (e.g., aquifers, estuaries, rivers and coastal areas); to protect critical natural resources including wetlands, wildlife and fisheries habitat, sand dunes, shorelands and unique natural areas; to protect the marine resources industry, ports and harbors from incompatible development and to promote access to the shore for commercial fishermen and the public; and to promote access to surface waters for outdoor recreation. If towns fail to take the possibility of accelerated sea-level rise into consideration when addressing these goals, the resulting plan may be insufficient if there is a significant rise in sea level.

Similarly, the Coastal Management Policies, made applicable to municipal comprehensive planning and land use regulation efforts through the Growth Management Act, establish policies which municipalities may fail to meet if they do not consider the potential threat of accelerated sea-level rise. Under the framework established by the Growth Management Act, Policy Four (to discourage growth in areas made hazardous by sea-level rise) will be furthered primarily through voluntary municipal comprehensive planning efforts, State review for compliance as a condition of awarding implementation grants, State technical assistance, State consistency certification for preference for certain funds, and through the long-range restriction that a municipality will not be able to enforce any land use ordinance (beyond the minimum shoreland zoning requirements) if it has not adopted a comprehensive plan which is consistent with the Act (including furthering its goals) by 1998 or 2003.

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

The December 1991 and March 1992 amendments to the Growth Management Act repealed the mandatory deadlines for plan completion (1991-96), and substituted the much less immediate requirement that if a municipality wants to enforce land use ordinances (including zoning), they must have adopted a plan which is consistent with the Act by January 1, 2003 (January 1, 1998 if they receive both planning and implementation assistance grants from the State). The amended Act provides more immediate incentives for compliance only in the form of preferences for certain funds and State financial and technical assistance for local growth management efforts. While the State may review the plans for compliance with the Act in certain circumstances (i.e., when the town applies for implementation assistance or when the town voluntarily requests a certificate of consistency), the State no longer has the ability to *require* towns to adopt plans and ordinances which promote the growth management and coastal policies goals. If a town opts to pursue comprehensive planning and zoning, the elements to be included in the comprehensive plan, the local processes, and goals to be promoted remained unchanged.

Despite amendments to the law, many towns continue to voluntarily undertake comprehensive planning and to follow through by adopting implementing ordinances. The State will continue to have an important role to play in providing technical assistance to these towns.

To date, the State's technical assistance to municipalities has focused on relative sea-level rise as a result of local land subsidence, rather than on accelerated sea-level rise as a function of global climate change. The information has generally been presented within the context of meeting Policy Four of the Coastal Management Policies Act and has not been integrated into a more general discussion about potential impacts on other goals such as efficient provision of public facilities, or protection of water quality, natural resources, ports or public access.¹⁴

While it is important that Policy Four has been made applicable to municipalities through the Growth Management Act, additional guidance

will be required from the State if it wants to encourage municipalities to plan for the possibility of an accelerated rate of shoreline change rather than just historical rates of change. If towns are expected to take the lead on coastal hazard management, they will need technical and financial assistance to evaluate the appropriateness of different strategies, to establish appropriate standards, and to translate these general recommendations into local plans and ordinances.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

If the possibility of accelerated sea-level rise is not built into the comprehensive plans and implementing ordinances developed as a result of this Act, towns will miss the opportunity to plan for this possibility now when policy adjustments are likely to be less expensive. Due to the general nature of the Act, however, accelerated sea-level rise will not affect the application of the law.

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| <p>D. MANDATORY SHORELAND ZONING ACT (Mandatory Zoning and Subdivision Control Act, 38 MRSA §§ 435-449) and Guidelines</p> |
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1. Summary of law in general

The Mandatory Shoreline Zoning Act requires all municipalities to adopt zoning and land use control ordinances applicable to their "shoreland area" which are no less restrictive than minimum guidelines adopted by the Board of Environmental Protection. The shoreland area is defined as "those areas within 250 feet of the normal high-water line of any great pond [10 acres or more], river or saltwater body, within 250 feet of the upland edge of a coastal or freshwater wetland [10 acres or more, as defined], or within 75 feet of the high-waterline of a stream."¹⁵ If a municipality fails to adopt a shoreland zoning ordinance which complies with the minimum guidelines, the Board of Environmental Protection may adopt a suitable ordinance on behalf of the municipality. Shoreland zoning ordinances are enforced by the

municipality; however, the State reserves the right to approve proposed amendments, to comment on proposed variances, and to bring actions against municipalities which fail to adopt, administer or enforce shoreland zoning ordinances.

2. Identification of portion of the law that relates to sea-level rise

The Shoreland Zoning Act was designed to promote public health and safety by protecting shoreland resources from degradation and by protecting against unwise development in that area. Of the multiple purposes, several relate to hazards similar to accelerated sea-level rise including: to protect buildings and lands from flooding and accelerated erosion; to control building sites, placement of structures and land uses; to conserve shore cover; and to anticipate and respond to the impacts of development in shoreland areas.

While not specifically crafted in response to accelerated sea-level rise, the Act does contain water *setback requirements* with the potential to minimize its impacts. The Guidelines¹⁶ established pursuant to the Act prohibit the construction of any new principal or accessory structure or any substantial expansion of an existing structure within the shoreland zone unless that structure is set back 100 feet from the normal high-water line of great ponds and rivers, and 75 feet from the normal high-water line of other water bodies, tributary streams or the upland edge of a wetland. However, in a General Development District (or its equivalent, allowing intensive commercial, industrial and/or recreational use), the setback requirement is 25 feet and there is no setback requirement in a Commercial Fisheries/Maritime Activities District (allowing functionally water-dependent uses).

These setback requirements are supplemented by a second set of provisions which require inclusion of certain land in a *resource protection district* (RP). If land is zoned RP, it is essentially subject to a 250 foot setback requirement since an RP district generally allows only non-intensive uses; no principal structures are allowed for residential, commercial, industrial, governmental

or institutional uses. Municipalities are required to include in this RP district:

- All lands within the shoreland area which are also rated "moderate" or "high" value wetlands (freshwater, salt marshes, salt meadows or wetlands associated with great ponds or rivers) by the Maine Department of Inland Fisheries and Wildlife;
- The 100 year flood plains along rivers and adjacent to tidal waters as shown on FEMA Flood Insurance Rate Maps or Flood Hazard Boundary Maps;
- Land along rivers or adjacent to tidal waters which are subject to severe erosion or mass movement, such as steep coastal bluffs.

They may also include other natural areas, public access areas, wildlife habitat areas or similar sites which should be protected from development. However, even if they meet one or more of the above criteria, if they are currently developed or meet the criteria for the Limited Commercial (mixed residential and low intensity business and commercial uses), General Development (intensive commercial, industrial or recreational uses) or Commercial Fisheries/Maritime Activities District (functionally water-dependent uses), they need not be designated as resource protection.

In addition, it should be noted that the law was amended, effective October 1993, to allow municipalities to incorporate a special exception provision to allow construction of a single-family residence in a Resource Protection District if: there is no other location on the property other than in the Resource Protection District where a structure can be built, if it was a lot of record prior to adoption of the Resource Protection District, if the improvements will not be on slopes of 20% or greater, if improvements are located outside of the velocity zone in areas subject to tides and it otherwise complies with the municipal flood plain ordinance, if the structure is 1,500 square feet or less, and it is set back to the greatest practical extent and no less than 75 feet.

The Guidelines also establish *performance standards for piers, docks, wharfs, bridges and other structures and uses extending over or*

beyond the normal high-water line of a water body or within a wetland. These may become increasingly important as sea level rises. Among the requirements are provisions that shore access shall be on appropriate soils and shall be constructed so as to control erosion; that the location shall not interfere with developed or natural beach areas; that the facility shall be the minimum size necessary; and that new structures will only be allowed if they require direct access to the water as an operational necessity; and that no existing structures extending beyond the normal high-water line may be converted to residential dwelling units.

Finally, by statute, as part of their shoreland zoning ordinance, coastal municipalities are required to address the *coastal management policies*, including Policy 4 requiring governments to discourage growth in coastal areas made hazardous because of sea-level rise, coastal storms, flooding or landslides. However, addressing this Policy has not been a high-profile concern on the part of municipalities or the Department of Environmental Protection. It is generally assumed that if the municipality meets the express minimum guidelines, no additional provisions are required to address the coastal management policies.

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

The Shoreland Zoning Act addresses accelerated sea-level rise to some extent by attempting to protect land that is not already developed from development that would interfere with natural coastal processes. If municipalities comply with the directive that coastal lands subject to flooding and severe erosion should be designated as Resource Protection, that designation should help retain that land in its natural condition so that it can respond to changes in the shoreline. However, municipalities are frequently reluctant to designate land as RP given the limited uses allowed in that district. And the new amendment may allow new residential development in Resource Protection Districts.

Similarly, the building setbacks (100 feet

from rivers and great ponds, 75 feet from coastal waters) may be of some help in mitigating possible impacts of accelerated sea-level rise. They are an improvement over no setbacks, but they will be insufficient in many areas. The performance standards for structures extending beyond the high-water line are also helpful since they are designed to minimize the intensity of that development.

However, there are several factors that restrict the Act's ability to address direct or indirect consequences of accelerated sea-level rise. First, there is an inherent tension in the Act since the minimum standards are established by the State but they are to be adopted and enforced by municipalities. A significant number of municipalities failed to pass the required amended ordinances by the July 1, 1992 deadline and face the prospect of the Board of Environmental Protection adopting an ordinance on behalf of the municipality. The portions of the Act most likely to contribute to mitigating the impacts of sea-level rise--the setback standards and the limits on development in the resource protection district--have been the subject of intergovernmental controversy; this does not bode well for local enforcement.

Second, there are many exceptions written into the Act and Guidelines which allow for more intense development than otherwise allowed. Certain mandatory minimum provisions cannot be altered by the municipality; setback requirements are in this category. However, there are ways around this limitation through the designation of a district. For example, a municipality may designate an area which includes some undeveloped land as a General Development District if there is an already discernible pattern of intensive development in the area; this would allow development of substantial intensity to continue in the shoreland zone which will only be required to set back 25 feet from the water. Similarly, while it meets the admirable objective of promoting water-dependent uses, designating an area as a Commercial Fishing/Maritime Activities district will allow intensive maritime commercial and industrial development without requiring any setback. Some local shoreland zoning ordinances allow construction of "marine related structures" with-

out any setback requirement. While intended to accommodate water-dependent uses, there have been reports of this provision being misused to allow construction of structures which greatly exceed the functional requirements of a boat house or trap storage facility, and are suspected of being used primarily for residential purposes.

Finally, there is flexibility for municipalities to deviate from the Guidelines as long as the resulting ordinance is "equally or more effective" in achieving the purposes of the Act. This can take the form of ordinances that are completely different from the recommended districts and uses contained in the Guidelines. Municipalities may deviate from most of the non-setback standards if special local conditions justify a different set of standards.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

This Act assumes a static shoreland position. There are no provisions for adjusting the mandatory minimum setback requirement based on local historical rates of erosion or projections of accelerated rates of sea-level rise. Depending upon the shoreline configuration and type of coast, the 75 foot setback from coastal waters may be completely insufficient to protect a structure over its expected economic life. Municipalities may increase the setback requirements above the minimums to address this problem.

The Act does promote water-dependent uses by encouraging municipalities to designate Commercial Fisheries/Maritime Activities Districts. However, it makes no provision to address the dilemma created by the fact that these critical uses may be the first displaced by rising seas. Any displacement may be compounded by the Guidelines which allow municipalities to designate multiple small Commercial Fisheries/Maritime Activities Districts. This may result in the creation of districts that do not allow any room for relocation beyond the existing site.

**E. SITE LOCATION OF DEVELOPMENT ACT
(38 MRSA 481-490)**

1. Summary of law in general

The Site Location of Development Act provides for State regulation of "development that may substantially affect the environment," including:

- development occupying land or water in excess of 20 acres;
- subdivision of a parcel of land of 20 or more acres into 5 or more lots during any 5 year period (subject to exceptions); or
- construction of a defined structure, meaning buildings, parking lots, roads, paved areas, wharves or other areas to be stripped or graded and not to be revegetated that occupy a ground area in excess of 3 acres.

Such development requires a permit from the Board of Environmental Protection. The standards for development review include: financial capacity, traffic movement, no adverse effect on the natural environment, soil types and erosion, ground water, infrastructure and flooding.

2. Identification of portion of the law that relates to sea-level rise

The standards for review of permit applications relating most directly to accelerated sea-level rise are the standards relating to the natural environment, soil and erosion, and flooding. The developer must fit the development "harmoniously into the existing natural environment" without adverse impacts on existing uses or other natural resources. Secondary and cumulative impacts of development on these resources may be considered, including the impacts on wildlife and fisheries. This standard includes the consideration that there be no unreasonable alteration of natural drainage ways.

The soil standard provides that the development "will be built on soil types which are suit-

able to the nature of the undertaking and will not cause unreasonable erosion of soil or sediment nor inhibit the natural transfer of soil." This standard would be considered if structures built in areas threatened by accelerated sea-level rise would inhibit the natural transfer of soil.

The standard on infrastructure requires not only that the developer make adequate provision for facilities for the proposed development, but also that the proposed development will "not have an unreasonable adverse effect on the existing or proposed" infrastructure in the municipality or area served by those services. This standard might be applicable if a proposed development, when long-range accelerated sea-level rise projections are considered, might increase local erosion and negatively impact infrastructure serving other development.

Development is only permitted if it will "not unreasonably cause or increase the flooding of the alteration area or adjacent properties nor create an unreasonable flood hazard to any structures." Until repealed effective October 1993, the Act also contained a provision that if the activity is on or adjacent to a sand dune, development will only be permitted if it "will not unreasonably interfere with the natural supply or movement of sand within or to the sand dune system."¹⁷

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

For those developments subject to review under the Site Location of Development Act, there are adequate standards for the Board to use to prevent development in those areas most vulnerable to accelerated sea-level rise if the Board is convinced by finding that the impacts of development in this area would be "unreasonable." The standards on the natural environment, flooding and soil erosion can be used for this purpose.

However, there are two significant limitations. First, this Act applies only to larger developments. Due to the perceived burden of going through DEP review, many developments are designed so that they only need local reviews and permits. For

example, it is very common for subdivisions to consist of just under 20 acres. Very significant development could occur in areas without consideration of these standards by the state-level reviewers if each development is small enough to avoid triggering the Site Location of Development Act review.

The second limitation is that the application standards to the threat of accelerated sea-level rise is fairly subjective. The regulations are fairly detailed for certain requirements related to the standards. For example, they do require erosion and sedimentation plans and permanent erosion control measures, and 50- to 330- foot buffers to protect adjacent waterbodies. Stormwater management systems must be maintained by developers and groundwater runoff must be retained on site so that post- development runoff does not exceed pre- development runoff. There are, however, no specific parallel regulations which flesh out how the standards are to be interpreted with regard to accelerated sea-level rise. Thus if the potential impact of accelerated sea-level rise becomes an issue in a particular proposed development, the interpretation of what constitutes an unreasonable impact on the environment, erosion, or flooding as a result of changing shorelines will be left to the interpretation of the Board without any guidance from regulations.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

The definitions contained within the Act are sufficiently flexible to adjust to changing shorelines so the land area subject to review will evolve with accelerated sea-level rise. The standards are also phrased so that the Board is able to take a wide range of concerns into consideration in assessing unreasonable impact. No specific amendments appear necessary to allow some consideration of accelerated sea-level rise within the existing standards for review.

The law could be improved to be more directly responsive to accelerated sea-level rise. In attempting to identify development that may substantially affect the environment, the Act has

already identified for additional scrutiny some activities taking place in the shoreland area. For example, lots of 40 or more acres do not count as lots unless the proposed subdivision is located wholly or in part within the shoreland zone. However, 1993 amendments removed the requirement that multi-unit housing development of 10 or more units not triggering review under any other standard must receive a permit if it is located in whole or in part in the shoreland area. As the nature and magnitude of threats of accelerated sea-level rise become more concrete, the State should consider designating more activities in shoreland areas as subject to this level of state environmental review. This could be accomplished by amending the definition of development that may substantially affect the environment.

There are currently no regulations which address accelerated sea-level rise and how that should be factored into the Board's assessment of compliance with the general standards of review. The Board should consider including provisions in the regulations which are specifically designed to detail how the erosion, flooding and sand dune standards should be applied within the context of anticipatory planning for accelerated sea-level rise.

F. SUBDIVISION LAW (30-A MRSA §§ 4401-4406)

1. Summary of law in general

This law establishes the minimum criteria for municipalities to use in reviewing subdivisions (defined as the division of a parcel of land (or structure) into 3 or more lots (or dwelling units) within any five year period that begins on or after September 23, 1971. Municipalities have sole subdivision review jurisdiction for subdivisions that are below DEP Site Location of Development Act thresholds, and concurrent jurisdiction over subdivisions that also need DEP review under that Act.

Municipalities may adopt more stringent

standards for subdivision review. The Department of Economic and Community Development has developed model subdivision regulations to assist municipalities with implementation of higher standards.

The substantive review criteria address water and air pollution, adequacy of water supply, impact on municipal water supply, erosion, traffic, sewage disposal, impact on municipal solid waste disposal, aesthetic, cultural and natural values, conformity with local ordinances and plans, financial and technical capacity, impact on outstanding river segments, ground water, flood areas, identification of freshwater wetlands, and storm water management.

2. Identification of portion of the law that relates to sea-level rise

The two criteria relate directly to accelerated sea-level rise: erosion and flood areas. The Act directs municipal planning boards not to approve a proposed subdivision unless it finds that:

- the proposed subdivision will not cause unreasonable soil erosion or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results;¹⁸ and
- if any part of the subdivision is in a "flood prone area," the proposed subdivision plan will include a condition requiring that principal structures in the subdivision will be constructed with their lowest floor, including the basement, at least one foot above the 100-year flood elevation.

This determination of the 100-year flood elevation is to be made based on Federal Emergency Management Agency (FEMA) Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, and other information presented by the applicant regarding whether the proposed subdivision is in a flood-prone area.

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

While neither of these standards for review

specifically mention historic or accelerated sea-level rise, they address possible impacts of changing shorelines. The erosion standard is very general and is most often used to address construction practices, such as erosion controls during site preparation, construction and clean-up, and to require revegetation plans which minimize non-point source pollution. However, if accelerated sea-level rise becomes a clear threat, local boards could use this standard to address development that might cause an increase in coastal erosion due to the effects of global climate change.

The flood area standard is much less subjective and tends to be applied in a mechanical fashion. The developer and reviewers generally rely on the FEMA maps to determine whether any part of the proposed subdivision is located in a special flood hazard area. While the precise standards may vary by municipality, most municipalities have adopted floodplain ordinances so they can participate in the National Flood Insurance Program. The model floodplain management ordinance prepared by the Office of Comprehensive Planning contains standards for reviewing subdivisions within the 100 year floodplain. The 1991 model subdivision regulations, prepared by Southern Maine Regional Planning Commission with funding from Maine's Office of Comprehensive Planning, essentially restate the model floodplain management ordinance standards to augment the subdivision statute, so the review under the subdivision ordinance and floodplain management ordinance would be substantially the same. The model subdivision regulations require that:

- all public utilities and facilities be located and constructed to minimize or eliminate flood damage;
- adequate drainage be provided to reduce exposure to flood hazards; and
- the plan not only include a statement that structures in the subdivision shall be constructed with their lowest floor (including the basement) at least one foot above the 100-year flood elevation, but also that the restriction appear in any document transfer-

ring or expressing an intent to transfer any interest in real estate or structure.

Many communities have actually required that the first floor elevation be two feet above the flood elevation as part of their floodplain management ordinance, so they may impose this stricter requirement through the subdivision regulations as well.

The extent to which the subdivision regulations will address direct or indirect consequences of accelerated sea-level rise depends in large part upon the accuracy of the FEMA 100-year floodplain maps. If they are based on historic rates of sea-level rise and do not take accelerated sea-level rise into account, they may underestimate the potential problem and allow the construction of subdivisions that are not adequately setback from flood hazards.¹⁹

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

Accelerated sea-level rise might affect the application of the law by changing the assessment of what is an "unreasonable" burden or impact under the subdivision review standards. These standards are sufficiently flexible to allow municipal boards to focus on an evolving set of concerns as erosion and flooding problems become more evident. However, planning boards will probably not feel sufficiently secure in their knowledge or legal standing to use these general standards to deny a project or impose conditions based on the potential impact of accelerated sea-level rise unless that threat is very well documented and almost immediate. Barring this, most planning boards will probably not factor long-range projections of accelerated sea-level rise into their review nor will they have the expertise available to them to go beyond a mechanical application of the flood area standards.

G. STATE FLOODPLAIN MANAGEMENT PROGRAM

1. Summary of program in general

Maine's Department of Economic and Community Development is the agency responsible for coordinating the National Flood Insurance Program (NFIP) in Maine. As such, it is responsible for assisting communities in qualifying for participation in the NFIP, assisting with the development and implementation of local flood plain management regulations, and establishing minimum state flood plain management regulatory standards consistent with NFIP regulations and state and federal environmental and water pollution standards.

The NFIP was created in 1968 under the National Flood Insurance Act to provide a nationwide system of federal insurance for property and structures located in designated flood hazard areas. Essentially the federal government makes relatively low-cost, guaranteed insurance available to homeowners to cover flood damage if the municipality in which they reside agrees to direct development away from designated hazardous areas and enforces a floodplain ordinance consistent with the regulations established under the Act.²⁰

Maine's DECD has developed model floodplain management ordinances for adoption by municipalities. The standards within the model ordinances vary, depending upon the level of detail in the information provided by FEMA. Detailed flood insurance studies have been conducted for less than half of Maine's communities. The remaining participating communities have only "A" zone maps (designating areas of special flood hazards in which no base flood elevations are determined and an estimated base flood elevation is optional).

The model ordinances require a Flood Hazard Development Permit for any development within any special flood hazard area. The applicant must submit information including data on elevations of base flood, lowest floor of structure, and level of

flood-proofing in non-residential structures as well as a certification by an engineer or architect that the floodproofing methods meet the detailed floodproofing criteria of the ordinance. These are all modeled after the federal requirements.

In addition, Maine's model ordinance contains standards for review of subdivision and development proposals requiring the Planning Board to assure that:

- All such proposals are consistent with the need to minimize flood damage;
- All public utilities and facilities are located and constructed to minimize or eliminate flood damage;
- Adequate drainage is provided so as to reduce exposure to flood hazards;
- All proposals include base flood elevation and, in a riverine floodplain, floodway data;
- Any proposed development plan will include a statement that structures on lots shall be constructed in accordance with the Development Standards, and that requirement will be included in instruments of transfer of any property interest.²¹

These are essentially the same requirements included in the 1991 Model Subdivision Regulations, discussed above.

2. Identification of portion of the program that relates to sea-level rise

Since Maine's Floodplain Management Program facilitates participation in the National Flood Insurance Program (NFIP), it very closely parallels the federal Act. The primary focus of the national program has been to minimize damage from flooding rather than coastal erosion, but coastal erosion is gaining increasing recognition as a hazard which should be addressed by the NFIP.

The NFIP itself does not consider any projected relative rise in sea level in its risk assessment. But the program may affect development in areas which are most vulnerable to the effects of rising sea level. The Act contains a mandate to "constrict the development of land which is

exposed to flood damage and minimize damage caused by flood losses" and to "guide the development of proposed future construction, where practical, away from locations which are threatened by flood hazards."²² However, there is significant debate about the impact of the NFIP on coastal development.²³

The FEMA hazard zones as originally drawn do not account for the hazards from erosion or sea-level rise. FEMA has commissioned a study "to determine the impact of relative sea level rise on the flood insurance rate maps" and to "project the economic losses associated with estimated sea level rise" for the nation and by region.²⁴ While some revisions have been proposed to address coastal erosion, no final revisions have been made to the National Flood Insurance Program nor have the maps been revised to reflect sea-level rise projections.

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

Maine has taken steps to meet the guidelines of the Act by ensuring that communities incorporate provisions to guide proposed subdivisions and development away from locations which are threatened by flood hazards. However, since consideration of an accelerated rate of sea-level rise is not currently incorporated into the controlling Federal program, Maine's Floodplain Management Program is not designed to address the consequences of accelerated sea-level rise. Statutory amendments to the NFIA will be required before Maine's Floodplain Management Program can be responsive to those concerns.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

As noted above, if sea level rises and coastal erosion and sea-level rise have not been incorporated into the NFIP, claims may outstrip the funds available to pay claims, and financial resources may be allocated in a very inefficient manner to repeatedly floodproof and repair high-hazard properties. Additionally, critical natural re-

sources such as wetlands will not be able to respond to rising sea level by migrating inland if their movement is blocked or impeded by structures or "floodproofing" measures.

**H. SUBMERGED LANDS ACT
(12 MRSA §§ 552, 558-A - 573)**

1. Summary of law in general

This Act establishes the framework for managing State-owned submerged and intertidal lands. It recites that the State owns submerged lands (meaning those lands beneath coastal waters, from the mean low water mark (or a maximum of 1,650 feet seaward of the mean high water mark, whichever is further landward) seaward to the three-mile boundary; land below the mean low water mark of tidal rivers upstream to the farthest natural reaches of the tides; all land below the natural low water mark of great ponds; and the river bed of international boundary rivers out to the international boundary) in trust for the benefit of the public. The Act relinquishes title to, and public trust rights in, submerged and intertidal lands filled before October 5, 1975. It establishes a program for the leasing of the remaining State-owned submerged and intertidal lands. The public has a general right to make use of submerged lands for navigation, fishing and other public trust uses, but must obtain a lease or easement for permanent structures (occupying for 7 or more months) or similar exclusive uses.

2. Identification of portion of the law that relates to sea-level rise

The portion of the law most relevant to accelerated sea-level rise is that the boundary for State ownership of submerged land is defined in relation to the mean low-water mark or 1,650 feet seaward of the mean high-water mark, whichever is further landward. This boundary will shift as the low- or high-water mark is altered as a result of sea-level rise. The statute does not create these state ownership rights, but rather recites the rights already established by federal statute and case

law.

The leasing program does not give particular legal preference to the upland owner for use of submerged lands. However, the Submerged Lands Rules do create a system of littoral zones and setbacks (applicable to projects within 1,000 or less feet of the shoreline) which allows the Bureau of Public Lands to opt to require a letter of no objection from a shoreland owner into whose littoral zone the proposed project extends and establishes setback lines for structures, subject to exemptions.²⁵

The Rules clarify that in coastal areas, the mean low water line (the beginning of state ownership except on mud flats) may be established through a survey conducted by a qualified land surveyor and referenced to a National Geodetic Vertical Datum as established by the National Oceanic and Atmospheric Administration.

The standards for review to be used by the Bureau in deciding whether to issue a lease or easement include an assessment of whether the use will unreasonably interfere with public access ways, navigation, fishing, marine uses, public safety. They also provide that the use should not conflict with "those aspects of the Coastal Policies or the Coastal Policy guidelines [citations omitted] which relate to the criteria considered by the Bureau as outlined in these rules."²⁶ It is unclear whether Coastal Policy 4 would be taken into account in submerged lands leasing decisions.

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

The Act does not in itself address any direct or indirect consequences of accelerated sea-level rise since it primarily addresses submerged lands. It does establish the regulatory scheme for lands that convert from upland or intertidal lands to submerged lands as a result of accelerated sea-level rise.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

The definition of submerged lands is tied to the mean low water line, which will shift with accelerated sea-level rise. The affect of accelerated sea-level rise will be to include more land within the scope of the submerged lands scheme as state-owned lands.

I. COASTAL BARRIER RESOURCES SYSTEM (38 MRSA §§ 1901-1905)

1. Summary of law in general

The statute, a mirror of its federal counterpart (U.S. Coastal Barrier Resources Act of 1982),²⁷ prohibits the expenditure of state funds or state financial assistance for development activities within the coastal barrier resource system. Proscribed development activities include construction or purchase of structures, construction of roads, airports, boat-landing facilities, bridges or causeways, and erosion prevention projects. The only exceptions to the prohibition on expenditure of state funds are for:

- maintenance, replacement or repair of state roads, structures or facilities;
- protection or enhancement of fish and wildlife resources and habitats;
- recreational uses not involving an irretrievable commitment of natural resources;
- scientific research;
- nonstructural shoreline stabilization projects designed to mimic, enhance or restore natural stabilization systems; or
- emergency actions essential to save lives, protect property, public health and safety approved by the Governor.

The coastal barriers identified by the federal Coastal Barrier Resources System are also identified by Maine statute as being part of the Maine Coastal Barrier System. Maps are available through the Maine Geological Survey office and

at the registry of deeds for each county.

2. Identification of portion of the law that relates to sea-level rise

This and the parallel federal law are designed to protect and conserve coastal barriers and the adjacent wetlands, marshes, estuaries, inlets and nearshore waters by discouraging development on and adjacent to those barriers. Among the reasons given for their preservation are to retain their natural storm protection function and to prevent development that would be vulnerable to hurricanes, storms and shoreline recession.

3. Analysis of extent to which it addresses any direct or indirect consequences of accelerated sea-level rise

This law provides limited protection for the included undeveloped areas in that it prohibits expenditure of state funds in support of development. It does not restrict private investment. It applies only to a small fraction of Maine's coastline; only 32 coastal barriers (e.g., coves, beaches, islands, points) are included.

4. Analysis of extent to which accelerated sea-level rise might affect the application of the law

Since the law prohibits erosion stabilization projects except for nonstructural shoreline stabilization projects that are designed to mimic, enhance, or restore natural stabilization systems, the areas designated as coastal barriers may decrease in size. In light of the threat of accelerated sea-level rise, it is appropriate to evaluate whether there are other areas which meet the criteria and should be included in the system.

J. ENDNOTES APPENDIX A

1. 38 MRSA § 480-C.
2. 38 MRSA § 480-B (2).
3. 38 MRSA § 480-B (1).

4. An Act Making Unified Appropriations and Allocations, Ch. 410, HP 215, Legislative Document 283, Sec. G-7.
5. Maine Legislative Service, 116th Legislature, Ch. 522 (Mar. 14, 1994).
6. 38 MRSA § 480-Q.
7. Ch. 355.
8. COASTAL ADVISORY COMMITTEE, COASTAL MANAGEMENT POLICY GUIDELINES (State Planning Office, Augusta, ME, December 1986) at 9.
9. *Id.*
10. MAINE STATE PLANNING OFFICE, MAINE COASTAL PROGRAM, IMPLEMENTATION OF MAINE'S COASTAL POLICIES, 1986-1988, (submitted to the Maine State Legislature, Jan. 1, 1989) at 9-10.
11. *Id.* at 21, 23.
12. See the specific discussion of those Acts.
13. 30-A MRSA § 4312(1)(E).
14. The publication, COASTAL MANAGEMENT TECHNIQUES: A HANDBOOK FOR LOCAL OFFICIALS, prepared by Land & Water Associates and Maine Tomorrow for the Department of Economic and Community Development, October, 1988, advises that growth in hazard areas should be prevented or discouraged to protect public health and safety, reduce public costs resulting from damage to public and private facilities, and to help maintain the health of natural systems which depend on floods and sediment to sustain them. (p. 35) It advises that sand dunes and beach systems should not be artificially "stabilized" but rather must be free to "migrate" landward with rising sea level to preserve their storm barrier function. This publication recommends that communities gather more information about natural processes occurring in their area. It recommends that towns work with Maine Geological Survey to determine their vulnerability to the effects of sea-level rise, to identify and map other hazard areas, and to determine shoreline erosion rates. It also recommends a review of FEMA maps for flood-prone areas. The publication recommends public education, vegetation maintenance, regulatory and investment responses to hazard area management. Local ordinances to restrict development in hazard areas, such as floodplain management ordinances, are identified as a first step. Additional regulatory efforts suggested may include: prohibiting structures in all floodplain areas including intermediate hazard zones, prohibiting

structures and fill adjacent to and in wetlands, requiring that structures and fill be well set back from the edge of wetlands, and requiring a minimum structure elevation of 2-3 feet above flood levels to maintain a margin of safety. It also recommends that the public obtain a property interest (easement, lease or purchase) in certain hazard areas and limit use to passive recreation or other public use, that public investments be planned to avoid hazard areas, that funding priority be given to relocate public facilities out of hazard areas, and that technical and financial assistance be made available to individuals seeking to relocate out of hazardous areas (pp. 35-39).

15. 38 MRSA § 435.
16. State of Maine Guidelines for Municipal Shoreland Zoning Ordinances, 06-096 Department of Environmental Protection Chapter 1000, Mar. 24, 1990.
17. Public Laws, 116th Legislature, 1993 First Regular Session, Ch. 383, § 23 repealing 38 MRSA § 484, sub-§8..
18. 30-A MRSA § 4404(4).
19. For further discussion, see Chapter 5, National Flood Insurance Program.
20. See Chapter 5, p. 5-28 for a more complete discussion of the National Flood Insurance Program.
21. Department of Economic and Community Development, "Model Floodplain Management Ordinance," Article VIII, A-E.
22. National Flood Insurance Act, 42 USCS § 4001(e)(2).
23. For further discussion, see B. MILLEMANN & E. JONES, STORM ON THE HORIZON: THE NATIONAL FLOOD INSURANCE PROGRAM AND AMERICA'S COAST, (Wash., DC: Coast Alliance, Sept. 1989) and R.H. PLATT, ET AL., COASTAL EROSION: HAS RETREAT SOUNDED? Program on Environment and Behavior, Monograph No. 53, (Institute of Behavioral Science, University of Colorado, 1992) at 26-37.
24. P.L. 101-137, § 5, 103 Stat. 825 (Nov. 3, 1989).
25. Bureau of Public Lands, Submerged Lands Rules, 1.6 B (11).
26. *Id.*, 1.7 C (8).
27. 16 U.S.C. § 3059. See discussion, Chapter 5.