

MASSACHUSETTS COASTAL PROGRAM POLICIES

This document, which is also contained within the [*Massachusetts Office of Coastal Zone Management Policy Guide - October 2011*](#) (PDF, 1 MB), presents the official Massachusetts coastal program policies. The policies are presented in the following nine categories: Coastal Hazards, Energy, Growth Management, Habitat, Ocean Resources, Ports and Harbors, Protected Areas, Public Access, and Water Quality. Each policy consists of three parts:

- A summary statement that presents the basic policy goal.
- A section on policy context that provides background and brief rationale for the policy.
- A section that summarizes the key elements and substance of the policy, along with information on how the policy is applied.

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MASSACHUSETTS COASTAL PROGRAM POLICIES

This section presents the official Massachusetts Office of Coastal Zone Management program policies, effective as of October 4, 2011. These policies serve as the foundation for the Massachusetts coastal program as approved by NOAA's Office of Ocean and Coastal Resource Management. Previous versions of these policies appeared in the 1978 *Final Environmental Impact Statement (FEIS) and Report for the CZM Program* and in the March 2002 *Massachusetts Coastal Zone Management Plan*, both of which are superseded by the text contained herein.

These program policies provide the legal frame of reference for all project review activities undertaken by CZM and also play an important role in informing non-regulatory aspects of other programs. A subset of these policies are known as the CZM enforceable program policies, identified below with an “[enforceable]” following the title of the policy. Enforceable policies are defined by the federal Coastal Zone Management Act as “state policies which are legally binding through constitutional provisions, laws, regulations, land-use plans, ordinances, or judicial or administrative decisions, by which a State exerts control over private and public land and water uses and natural resources in the coastal zone.” The entire substantive content of the legal authorities associated with the enforceable policies has been incorporated by reference into the respective policies; therefore, as applicable, any such content is referenced by CZM in the federal consistency review process. The guiding principle here is that consistency with an enforceable policy cannot be achieved without compliance with its underlying state authorities. The complete list of state legal authorities underlying the Massachusetts Coastal Program is found in Appendix 3.

In addition to the enforceable program policies, the Massachusetts coastal program includes policies that—while not necessarily directly enforceable through legally binding authorities—express the state's goals and priorities for the management and use of its coastal resources. Under the Federal Consistency Regulations, federal permit applicants are required to “demonstrate adequate consideration of [approved coastal management program] policies that are in the nature of recommendations.”

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Coastal Hazards

It is CZM's intent to: (1) prevent, eliminate, or significantly reduce threats to public safety, property, and environmental resources resulting from hazards such as erosion, flooding, and storm damage; (2) allow natural physical coastal processes to continue while allowing appropriately sited coastal development and economic growth and promote the use of non-structural alternatives for shore protection where appropriate and to the extent feasible; (3) limit, prohibit, or condition public expenditures in coastal high hazard areas to ensure that increased exposure to coastal hazards is not encouraged; and (4) prioritize public expenditures for acquisition and relocation of structures out of hazardous coastal areas. Hazardous coastal areas are defined as areas susceptible to storm surge and waves, flooding, erosion, and relative sea level rise. CZM has developed the following four policies to achieve these objectives.

Coastal Hazards Policy #1 [enforceable]

Summary Statement

Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean.

Policy Context

In addition to their ecological value, natural landforms in the coastal zone (barrier beaches, dunes, beaches, coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean) provide significant protection from coastal storms, flooding, erosion, and relative sea level rise. Beaches, marshes, dunes, and land subject to coastal storm flowage dissipate destructive storm waves. Dune systems and coastal banks, particularly if stabilized by beach grasses and other binding vegetation, prevent direct wave attack against landward areas due to their elevation and ability to dissipate wave energy. Barrier beaches¹ protect both mainland development and the salt marshes and other productive habitat between them and the mainland.

To function effectively as natural buffers, however, these landforms and the natural

¹Barrier beaches, as defined under the Massachusetts Wetlands Protection Act (WPA) regulations, are narrow, low-lying strips of beach and dunes that are roughly parallel to the coastline and are separated from the mainland by a body of water or wetland. Coastal barriers designated as part of the Coastal Barrier Resources System through the Coastal Barrier Resource Act (CBRA), referred to as CBRA units, may vary from those barriers designated as barrier beaches according to the WPA. These designations have separate regulatory definitions. Where barrier beaches are defined in the WPA regulations to generally consist of coastal beaches and coastal dunes, CBRA units generally consist of undeveloped barriers or sections of barriers but may also consist of associated aquatic environments.

processes that link them together must remain relatively free from alterations that would disturb their state of “dynamic” equilibrium. For example, if natural erosion of a beach, dune, or coastal bank is providing sediment via longshore sediment transport to a beach farther down the coast, maintaining this flow of sediment is important. In addition, many barrier beaches migrate slowly landward and in a downdrift direction. This movement allows them to maintain their elevation, form, and volume, and thus, their protective capability relative to rising sea level and storm forces.

Development in these sensitive and hazard-prone areas is at risk of substantial property damage during coastal storms (including, especially, powerful major “northeasters” and hurricanes). Development may also impair the ability of the landform to buffer other landward development from impacts. As impacts to property from storms, flooding, erosion, and relative sea level rise increase, there is, in turn, increased demand for the construction of protective structures, such as seawalls and revetments. In some instances, such structures have been effective and are necessary, particularly where natural buffers have been irrevocably lost, such as in urban areas. However, they are becoming increasingly recognized as expensive short-term solutions, which frequently exacerbate problems elsewhere along the coast and foster a false sense of security. For example, groins typically cause accretion on their updrift side but erosion of the shore on their downdrift side, resulting in accelerated loss of land and increased actual and potential storm damage to structures and natural resources.

Coastal engineering structures are generally constructed along eroding shores or areas subject to storm damage from wave activity. As the high water line on an eroding shore migrates toward the engineered structure (such as a seawall, revetment, or bulkhead), the beach diminishes in volume and width resulting in the eventual loss of the beach and its protective functions, as well as loss of the recreational value of the beach and the public trust rights of fishing and fowling in the intertidal area. Furthermore, the interaction of waves with these coastal engineering structures increases scour, often resulting in the steepening of the fore- and nearshore areas. The closer the seawall, revetment, dike, or other coastal engineering structure is to the high water line and its increased wave activity, the greater the impacts of erosion, scour, and wave forces on the structure.

If properly designed and implemented, non-structural protective and restoration measures, such as beach and coastal bank nourishment, dune rebuilding, and stabilization by vegetative plantings, can closely simulate natural coastal processes and provide effective buffers against storm forces. These measures are generally substantially less expensive than engineered structures, are aesthetically more compatible with natural landforms, and avoid or minimize the creation of adverse effects on adjacent or downcoast areas. Therefore, non-structural alternatives should be favored over structural measures where feasible.

Relocating or setting development back landward, away from the destructive capability of storm waves, erosion, flooding, and relative sea level rise, reduces or can eliminate a potential hazard. In addition, this action negates the necessity of altering a natural coastal landform to accommodate construction and occupation of the site. Elevating structures above the destructive capability of storm waves, floods, and projected relative sea level rise (for at least the life of the structure) also reduces the potential for storm-related damage.

Barrier beaches on which activities are allowed that have the potential to alter wetlands resources (e.g., off road vehicle use) are required to have approved barrier beach management plans. The Commonwealth has identified, designated, and mapped 681 barrier beaches. Guidance for preparing barrier beach management plans to aid in balancing the myriad of competing uses and to protect the beneficial function of the barrier can be found in *Guidelines for Barrier Beach Management in Massachusetts*, 1994, which is available from CZM.

The historical trend in relative sea level rise at the Boston tide gauge from 1921-2006 is 2.63 millimeters (mm) per year, or about 26 centimeters (cm)—or 0.86 feet—per century. Recent projections of global sea level rise for the next century suggest a rise of 100 cm or greater. There is also increasing evidence that the northeastern United States will experience several tens of centimeters additional sea level rise due to regional changes in ocean currents and ocean warming. Current rates of sea level rise—as well as projections for accelerated trends—are significant threats to coastal development and resources in the Commonwealth. Sea level rise will increase the height of storm surges and associated coastal flooding frequencies, permanently inundate low-lying coastal areas, and amplify shoreline erosion. Extensive development and infrastructure, both public and private, will be affected in these expanding at-risk areas. In addition, entire complexes of coastal wetland resources are also threatened as they seek to keep pace with rising tides through vertical accretion and landward migration. This is particularly relevant in those portions of the coastal floodplain that are immediately landward of salt marshes, coastal beaches, barrier beaches, coastal dunes, or coastal banks. Activities carried out within these transitional areas of coastal floodplains may interfere with the natural landward migration of the adjacent coastal resource areas and reduce their geographic extent resulting in the reduction of the storm damage protection and flood control capabilities of these important landforms. Therefore, relative sea level rise should be factored into the design life, elevation, and location of buildings and other structures within the coastal floodplain.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Wetlands Public Interests and Resource Area Protection

The Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40) serves to identify eight “public interest” functions that wetland areas provide and performance standards to protect these functions. Any activity that will potentially affect a wetland area is to be regulated in order to contribute to the following interests:

- Protection of public and private water supply.
- Protection of groundwater supply.
- Flood control.
- Storm damage prevention.
- Prevention of pollution.
- Protection of land containing shellfish.
- Protection of fisheries.
- Protection of wildlife habitat.

Coastal resource areas under jurisdiction of the WPA include—but are not limited to—coastal banks, coastal beaches and tidal flats, coastal dunes, barrier beaches, land subject to coastal storm flowage, and land under the ocean. Review is required for any activity that will remove, fill, dredge, or alter any wetland resource area, with “alter” being defined to include (among other things) the changing of drainage characteristics, flow and/or sedimentation patterns, or flood retention areas, and/or the destruction of vegetation. The WPA regulations contain extensive damage prevention standards that are organized according to: (1) the type(s) of coastal wetland resource area in which a project is located; and (2) the statutory interests that are declared (or presumed) to be significant within each area (i.e., storm damage prevention, flood control, or protection of wildlife habitat and/or marine fisheries). The regulations also identify the characteristics of the respective resource areas that, if changed by a proposed project, may result in adverse effects on interests protected by the wetlands statute. In certain circumstances, the project can be approved only if it can be designed and carried out with “no adverse effect;” in others, the operative rule is that best available measures must be used to minimize adverse effects. “Best available measures” mean the most up-to-date technology or the best designs, measures, or engineering practices that are commercially available.

Public Trust, Tidelands, and Waterways

The Massachusetts General Law Chapter 91 Waterways Program serves to protect the public’s interest and rights in tidelands, great ponds, and rivers. The regulations (310 CMR 9.00) list the geographic areas and activities subject to jurisdiction, which can be summarized as including all tidelands, navigable rivers, great ponds, and filled tidelands (310 CMR 9.04), though landlocked filled tidelands are not in jurisdiction. Activities subject to Chapter 91

licenses or permits are listed in 310 CMR 9.05 and include:

- New fill or structures,
- Existing fill or structures not previously licensed,
- The alteration of existing fill or structures,
- Dredging projects,
- Beach nourishment projects,
- Mooring fields,
- Water level manipulations of Great Ponds, and
- New unlicensed uses of fill or structures in jurisdiction.

Review of an activity under Chapter 91 focuses initially upon its water-dependency. The Waterways Regulations restrict new fill or structures in any coastal waterways (below the high water mark) for uses that are classified as either nonwater-dependent or accessory to water-dependent. Exceptions to this prohibition are few and include: replacement of existing, previously authorized filled or pile-supported structures; filling to eliminate irregularities in previously authorized filled areas, also on a 1:1 replacement basis; and certain shoreline stabilization and infrastructure modification activities. Nonwater-dependent projects can only be permitted if they meet three tests: they serve a proper public purpose, their benefits exceed their detriments, and they are consistent with CZM's enforceable program policies. In addition, specific performance standards apply to all jurisdictional activities. With respect to coastal hazards, a few examples include:

- In coastal high hazard areas, new or expanded buildings for residential use shall not be located seaward of the high water mark.
- New buildings for nonwater-dependent use intended for human occupancy shall be designed and constructed to withstand the wind and wave forces associated with the statistical 100-year frequency storm event and incorporate projected sea level rise during the design life of the buildings.

Coastal Engineering Structures/Non-Structural Alternatives

As advanced by authorities provided through the above regulatory programs and others listed in Appendix 3, non-structural alternative approaches to coastal hazards reduction are preferred over structural alternatives. Structural flood and erosion control alternatives should not interfere with the ability of a coastal landform to erode (providing material to adjacent beaches, dunes, and nearshore areas) and respond to wind, tide, and wave activity, if these landforms contribute to storm damage prevention or reduction and/or flood control. Beaches and dunes must also be allowed to naturally (re)build and migrate and/or grow landward, seaward, and laterally.

Where applicable, structural flood and erosion control alternatives may be allowed (e.g., to protect a structure built prior to August 10, 1978) only when it is determined through an alternatives analysis that non-structural alternatives are not feasible. When a coastal engineering structure, such as a seawall, revetment, or bulkhead, is legal and determined to be the only feasible alternative, a commensurate volume of compatible material must be periodically placed in the littoral system to compensate for the material that is lost to the system. The volume of material to be required to be placed in the littoral system will be based on calculation of the long-term average annual erosion rate of the coastal landform at the site. Short-term rates can be considered in determining the compensatory volume of material if the issuing authority determines that the short-term rate is more indicative of current and future conditions due to alterations along the shore.

If an existing coastal engineering structure is required to be replaced or substantially repaired, and the structure is noted to be causing adverse effects (e.g., end scour and/or accelerated erosion due to impoundment of material), consideration will be given to calculating and placing a volume of compatible sediment in the location of the adverse effect or in the littoral system to mitigate the adverse effect. If the coastal engineering structure(s) is noted to be causing serious adverse effects on adjacent or downdrift property such that public health or safety concerns are apparent, alternatives to the structure(s) will be required to be analyzed, and if feasible, a preferred alternative implemented.

Restoration and/or enhancement of previously impaired environmental resources through non-structural alternatives will be encouraged, and where appropriate, required. Existing buildings located in dunes, beaches, and barrier beaches that are proposed to be substantially reconstructed or improved, or the foundation is proposed to be replaced, will be elevated on open pilings a sufficient height above the land surface to allow the underlying landform to provide its beneficial functions, and to allow adequate sunlight penetration for stabilizing plant growth.

Priority emphasis will be placed on first considering non-structural measures, such as dune, beach, and/or coastal bank nourishment, to preserve and restore the natural protective functions of coastal landforms and processes. Structural measures will be allowed only following an alternative analysis of hazard mitigation techniques that conclusively determines that no non-structural alternative is feasible.

Erosion and Relative Sea Level Rise

As advanced by authorities provided through the above regulatory programs and others listed in Appendix 3, long-term (or where applicable, short-term) rates of erosion and relative sea level rise should be taken into consideration in the review of proposed new, substantially reconstructed, or substantially improved construction. The need for resource areas (salt marshes, dunes, beaches, etc.) to migrate landward in response to relative sea level

rise should be addressed through the design, placement, and elevation of structures, as well as for other activities in the coastal floodplain. Structures should be placed as far landward as feasible to avoid or at least minimize potential coastal hazards impacts and to allow landward migration of resource areas; elevation of structures is another means of minimizing unavoidable impacts.

Coastal Hazards Policy #2 [enforceable]

Summary Statement

Ensure that construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Flood or erosion control projects must demonstrate no significant adverse effects on the project site or adjacent or downcoast areas.

Policy Context

Estuaries and coastal embayments are particularly productive areas and prime habitat for a variety of marine species. The discharge of freshwater from rivers into estuaries helps to create favorable salinity regimes for certain marine species. Interference with natural river discharge and tidal flushing can alter circulation and sedimentation patterns such that storm damage, erosion, and/or flooding can be exacerbated or shifted to locations not previously experiencing these hazards. Coastal engineering structures, such as groins or revetments, can adversely affect adjacent or downcoast areas by trapping sediments that would otherwise be transported downcoast by littoral processes or by impairing the functioning of natural buffers.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Coastal Engineering Structures

Design and construction of solid fill piers, bulkheads, groins, jetties, revetments, or other permanent structures in coastal waters will be examined to determine the project's impact on:

- Alterations to bottom topography that may result in increased storm damage or erosion of coastal beaches, coastal banks, coastal dunes, or salt marshes;
- Sediment transport processes that may increase flood or erosion hazards by affecting the natural replenishment of beaches;
- Erosion rates and the form and volume of adjacent or downdrift beaches; and

- Littoral drift volumes and patterns, as well as flushing rates and discharge capacity in estuaries and coastal embayments.

Transportation and Hydromodification

The design and construction of highways, roads, bridges, and dams, and the diversion or impoundment of water, will also be reviewed for conformance to the above provisions. Additionally, construction of these facilities in contiguous upland areas must not:

- Significantly increase upland erosion, induce or accelerate runoff of contaminants, or otherwise adversely affect the quality of coastal receiving waters.
- Affect the quantity of freshwater discharge entering coastal receiving waters such that circulation and sedimentation patterns would be adversely altered causing additional hazards elsewhere.

Coastal Hazards Policy #3 [enforceable]

Summary Statement

Ensure that state and federally funded public works projects proposed for location within the coastal zone will:

- *Not exacerbate existing hazards or damage natural buffers or other natural resources.*
- *Be reasonably safe from flood and erosion-related damage.*
- *Not promote growth and development in hazard-prone or buffer areas, especially in velocity zones and Areas of Critical Environmental Concern.*
- *Not be used on Coastal Barrier Resource Units for new or substantial reconstruction of structures in a manner inconsistent with the Coastal Barrier Resource/Improvement Acts.*

Policy Context

This policy is primarily aimed at ensuring the soundness of public investment for public works projects in hazardous coastal areas. First, public facilities and infrastructure (such as roads, sewers, and/or water lines) that are constructed in hazardous coastal areas may be subjected to continual damage necessitating costly repair and maintenance. Second, the provision of public services in hazardous coastal areas may encourage new development that would be incompatible with the risks and the need to protect natural buffers. Third, increasing public services, together with the availability of flood insurance, may increase private property values, thereby inducing pressure for additional federal or state subsidies to build shoreline protection structures. Such a result would be inconsistent with the state and national policy to shift the burden of risk of living in hazardous coastal areas to the property

owner and may induce spiraling subsidies for development in hazardous areas, as well as discourage voluntary relocation.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Installation or Expansion of Infrastructure

The installation or expansion of infrastructure (such as sewerage systems, treatment plants, water lines, roads, bridges, etc.) in highly dynamic and unstable environments (such as barrier beaches and velocity zones) is discouraged because construction of these facilities may encourage conversion of summer homes to year-round use or stimulate new or expanded development. Other public health or safety issues may be created or exacerbated as a result of new or expanded infrastructure in hazardous coastal areas, such as the depletion of critical groundwater supplies when sewerage facilities relocate significant sources of water. Additionally, storms or floods may lead to system failures and create severe pollution problems.

In most cases, infrastructure in high-hazard coastal areas should be constructed only as a last resort, after rigorous alternatives analysis has demonstrated that other options—such as the improvement of existing onsite subsurface disposal systems, shared systems, or relocation—or locations are not viable and that the project is needed to address a well-documented, severe, public health or safety problem. The design capacity of sewerage or water systems should be limited to the existing peak populations, and the systems should be adequately protected and flood-proofed.

In addition to the above criteria, structural solutions will only be implemented if:

- Non-structural measures, such as acquisition, relocation, land-use regulation, flood-proofing, and dune/beach restoration or stabilization have been evaluated and rejected as being ineffective or legally infeasible.
- Implementation of structural measures will not seriously impair the functioning of natural processes, nor adversely affect adjacent or downcoast areas.

Federal and/or State Funding of Public Works

Regardless of whether structural or non-structural measures are used in hazardous coastal areas, federal and/or state funding of such measures should only be used if:

- The area to be protected has substantial public benefit in the form of protection of existing public facilities or development of improved public access, and expanded public use opportunities can be achieved in conjunction with construction of the proposed project.
- Adequate land-use regulations or physical controls on access and occupation of the area can be established to prevent deterioration of restored or stabilized areas.
- In the case of restoration and nourishment, adequate design criteria have been established and can be achieved to ensure proper height, slope, width, and sand grain size of restored dunes and beaches.
- Adequate cost-sharing, principally with direct beneficiaries, is developed.
- The costs of and responsibilities for future maintenance have been identified and agreed to. Maintenance will principally be the responsibility of the direct beneficiaries, such as the owner of property immediately landward of publicly funded seawall (re)construction or beach nourishment projects.

Coastal Hazards Policy #4

Summary Statement

Prioritize acquisition of hazardous coastal areas that have high conservation and/or recreation values and relocation of structures out of coastal high-hazard areas, giving due consideration to the effects of coastal hazards at the location to the use and manageability of the area.

Policy Context

Communities can prevent significant damages and costs associated with storm events and other natural disasters along the coast through property acquisition. This measure is highly effective at decreasing the public burden of response, recovery, and repair. Acquisition of coastal areas vulnerable to erosion, flooding, and sea level rise provides other public benefits, including public access and wildlife habitat, by protecting open space. Property acquisition also prevents or mitigates costly storm damage by eliminating homes in hazard prone areas, protects lives of residents and emergency responders, and helps preserve critical resource areas.

Property acquisition and land preservation, either in full or in part through easement purchase, is a common means of preventing further damages and preserving or expanding open space. It is also the most effective tool for preventing growth and development that would be vulnerable to the effects of coastal hazards or would impair the buffering functions of natural areas. Further, most open space uses will not require construction of extensive facilities and, therefore, are appropriate for hazardous coastal areas. The benefit of preventing future damages and providing open space for conservation and recreation can far

exceed the cost of acquisition including relocation expenses. The value of properties adjacent to open space tends to increase, which increases the tax base. Open space also increases floodwater storage capacity further benefiting the entire community.

Key Policy Elements

Important elements of this policy are described below.

Hazard Mitigation as a Component of Acquisition for Recreation and Land Conservation

Absent any dedicated program for the acquisition of lands primarily for hazard protection benefits, the availability of acquisition funds will be dependent, in part, on the recreational or habitat protection benefits that can be derived. Land conservation under recreation-oriented programs should prioritize acquisition of hazardous coastal areas if they:

- Serve as a natural buffer protecting public investments in nearby or downcoast areas,
- Abut an existing public recreational area, or
- Can be improved through non-structural measures so that they can sustain an appropriate type and level of public recreational activity for a reasonable time, given the nature of the hazards present.

Acquisition efforts focused on protecting the ecological value of coastal areas should prioritize high-hazard areas for acquisition if they serve as natural protective buffers or if their buffering capabilities could be restored through non-structural improvements, particularly if land use or other controls are inadequate to prevent development that would be vulnerable to damage or would exacerbate existing hazards.

Hazard-Prone Developed Areas

Acquisition should also be prioritized if federal, state, and/or local funds have been repeatedly allocated for flood-proofing or repair of damaged utilities, roads, bridges, or other public services. Acquisition of repeatedly damaged areas may be justified to prevent redevelopment that would again risk major losses, degrade natural buffering functions, or require continued public subsidy (such as disaster relief). Acquisition of coastal lands for hazard area management should be coordinated with acquisition for recreation projects. In addition to acquisition, CZM will support land-use control measures that seek to reduce risks in erosion- and flood-prone areas and protect natural buffers. CZM also supports restoration measures, access controls, and other means that may be taken at the local level to enhance the protective capabilities of natural land forms, such as dunes and barrier beaches.

Energy

CZM's objective is to ensure that the development and maintenance of energy resources are completed with minimal displacement of water-dependent industry and by the least environmentally damaging means practicable. To achieve this objective, in addition to its other policies, CZM has developed two energy policies: an enforceable policy regarding siting and location of energy facilities and a policy addressing energy conservation.

Energy Policy #1 [enforceable]

Summary Statement

For coastally dependent energy facilities, assess siting in alternative coastal locations. For non-coastally dependent energy facilities, assess siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

Policy Context

Energy facilities serve important public and national interests. An energy facility, on one level, is like any other major development project and may entail, for example, dredging or filling, waste discharge, increased runoff, thermal discharge, and fisheries impacts. In this regard all of the CZM program policies are applicable to the development of energy resources in the coastal zone.

Massachusetts has created a unique state agency—the Energy Facilities Siting Board (EFSB)—for reviewing and approving energy facilities and sites. The EFSB is charged with ensuring a reliable energy supply for the Commonwealth with a minimum impact on the environment at the lowest possible cost. The primary function of the EFSB is to license the construction of major energy infrastructure in Massachusetts, including large power plants, electric transmission lines, natural gas pipelines, and natural gas storage facilities. The scope of the EFSB's review of a proposed facility varies, depending on the type of facility being reviewed. The EFSB's review of electric generating plants focuses on environmental impacts and mitigation, while its review of other types of facilities considers the need for the proposed facility, the cost of the facility, and its impacts on the environment. The EFSB has incorporated CZM policy considerations into its review and approval process.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Coastal Dependency and Alternative Site Evaluation

Where a facility is proposed for coastal siting, the project proponent must propose, evaluate, and compare at least one alternative site. If the proposed facility is coastally dependent, as defined below, the applicant must propose, evaluate, and compare at least one alternative site in the coastal zone. If a proposed facility is not coastally dependent, the applicant must propose, evaluate, and compare at least one inland site. Any alternative shall be reasonably determined and demonstrated to be capable of development and licensing or approval by all federal, state, regional, and local agencies.

Among other matters, the evaluation must include:

- A justification of the necessity for or advantage of coastal siting together with an explicit definition of the process developed to compare alternative sites.
- The location of the site in relation to significant environmental and resource areas.
- Identification and evaluation of the CZM program policies and regulatory requirements that apply to each site.
- Identification of relevant facilities and resources that may be in the national interest, including potential competition or conflicts among or between such facilities and resources.
- An environmental description of each site and its vicinity, including a review of significant land, air, and water use; ecology; geology; hydrology; and meteorology.
- An environmental analysis of construction impact.
- An environmental analysis of facility operation including land, air, and water use; ecological impact; heat dissipation; waste, chemical, and biocide discharge; health and safety; visual and aesthetic impact; and decommissioning.
- A socioeconomic impact analysis including measures to mitigate adverse impact during construction, operation, and decommissioning.
- A summary analysis of all measures to be taken to comply with land, air, and water use and ecological standards, policies, regulations, bylaws, and statutes of the Commonwealth and its political subdivisions.

Coastally dependent energy facilities are facilities that:

- Utilize the indigenous energy resources of the coastal zone.
- Serve as a transfer point between ocean and land.
- Transmit or transport energy or energy sources from a transfer point or other energy facility located in the coastal zone to an inland or other coastal location.
- Store energy or energy sources necessary for transshipment from the ocean, for surge storage, or to supply coastal energy facilities and maritime industries.

Facilities that do not meet these criteria are not coastally dependent.

Based on this definition, the coastal dependency of specific energy facilities is indicated below. Additional factors to be considered in evaluating such facilities are also noted.

Oil terminals are coastally dependent facilities. Additional factors that may be evaluated when considering alternative sites include:

- Impacts of any new dredging that may be required at the proposed site versus the use of alternative sites that may not require new dredging.
- Accessibility of proposed alternatives to oil distribution pipelines.
- Determination if the need for the proposed facility can be met by using existing terminal capacity or space in port areas, if either is available for use by the applicant.

Oil tank farms may be coastally dependent facilities if they include:

- Facilities used for storage of bunker fuel and fuel used by oil-fired electric generating plants located on the coast.
- Facilities used to store oil for transshipment by coastal tankers and barges.
- Surge oil storage at oil terminals.

Additional factors that may be evaluated when considering alternative sites for oil tank farms include:

- Impacts associated with tanker truck traffic, if applicable.
- Accessibility to pipelines for receipt of oil.

Other oil storage facilities are not coastally dependent.

Gas facilities that are not coastally dependent include those fed by tanker truck or rail, as well as gas processing facilities and storage facilities. Additional factors considered when evaluating alternative gas facility sites include:

- Assessment of the risks to public safety, including the potential magnitude of danger and size of populations affected.
- Evaluation of the size of available buffer zones between the proposed facility and other land or water uses.

Electric generating facilities are not coastally dependent, except for certain renewable energy facilities that use ocean resources to generate electricity (as described below in renewable

energy generating facilities) or those that qualify as an expansion of existing facilities (see below). Additional factors considered when evaluating site alternatives for electric generating facilities include:

- Impacts of transmission line corridors that may be required at each alternative site.
- Evaluation of alternatives to “once through” cooling systems.
- Availability of cleanest fuels.

Refineries are not coastally dependent. Additional factors considered when evaluating site alternatives for refineries include:

- Acreage allotted for a buffer zone.
- Available alternatives to “once through” cooling systems.
- Impacts associated with the generation of any hazardous wastes.

Transmission lines and pipelines are coastally dependent where transmitting or transporting energy to, from, or within the coastal zone. Additional factors considered when evaluating site alternatives for transmission lines and pipelines are:

- Environmental impacts of transmission line and pipeline corridor construction and maintenance.
- Risks to public safety, including the potential magnitude of danger and size of populations affected.
- Environmental impacts of potential spills, leaks, and ruptures of pipelines.
- Impact of proposed pipeline on existing coastal infrastructure, such as shipping lanes, cables, pipelines, and tunnels.

Expansion of existing energy facilities located in or affecting the coastal zone may be coastally dependent if:

- The existing and expanded facility is dependent on existing infrastructure, such as fuel delivery systems and transmission lines that are currently located in the coastal zone.
- All new facility and ancillary construction (including but not limited to transmission lines, fuel delivery systems, and traffic systems) are fully described and impacts to the land and water resources and uses of the Massachusetts coastal zone are fully assessed, avoided, minimized, and mitigated.
- In keeping with Executive Order (E.O.) 385 Planning for Growth, the effects of the proposed additional energy capacity on residential and commercial growth are described.

Renewable energy generating facilities that are coastally dependent include those that use ocean thermal, wave, or tidal energy resources. Wind power generation facilities are presumed to be coastally dependent if:

- For a proposed wind power facility that requires an Environmental Impact Report, the EEA Secretary has determined that the facility requires direct access to or location in tidal waters and cannot reasonably be located or operated away from tidal waters.

If an EIR is not submitted, the above presumption may be overcome only upon a clear showing that the proposed facility can reasonably be located or operated away from tidal waters.

Siting Energy Facilities

In addition to the requirements providing for analysis of alternative sites described above, the EFSB review and approval processes have also included special provisions to ensure consistency with the CZM program policies.

Among the findings that the EFSB must make in approving a facility proposal or notice of intention are that the facility plans are consistent with current health, environmental protection, and resource-use policies of the Commonwealth and consistent with the policy of providing a reliable energy supply, at lowest cost and minimum environmental impact. In making these environmental findings, the EFSB will use the CZM program policies as adopted by the EEA Secretary under M.G.L. c. 21A regulations. Through these policies, CZM has specified which types of energy facilities are coastally dependent and, as applicable, what kinds of alternative sites should be considered by the EFSB to ensure that reasonable alternatives are considered and that sites are avoided that could lead to substantial harm to the most valued areas of the coastal zone. The CZM policies will be used by the EFSB to conduct its evaluation of environmental impacts on proposed sites as part of its statutory charge to provide a reliable energy supply with minimum environmental impact at lowest cost.

In 980 CMR 9.03(1)(b), there are stipulations related to Areas of Critical Environmental Concern, restrictions and prohibitions developed under the Inland and Coastal Wetlands Restriction program, and requirements the Ocean Sanctuaries Act. The EFSB gives “prime consideration” to the environmental impacts of siting facilities in Areas of Critical Environmental Concern. In restricted wetlands, only certain energy facility components (transmission lines, underground utility lines, and cooling water intakes and outfall structures) will be permitted, depending on the type of wetland that has been restricted under the Inland and Coastal Wetlands Restriction program. The Ocean Sanctuaries Act contains specific prohibitions and conditions on the siting, construction, and operation of certain energy facilities, gives special cognizance to the care and protection of the sanctuaries

in siting energy facilities, and requires that state agencies—including the EFSB—issue permits or licenses for activities or conduct their activities consistently with the Act.

As contained in Appendix 5, additional requirements apply in the event an energy facility is located within areas subject to the Massachusetts Ocean Management Plan. Per the Ocean Act of 2008, all state certificates, licenses, permits, and approvals for any proposed structures, uses, or activities within such areas must be consistent to the maximum extent practicable with the plan. The Massachusetts Ocean Management Plan was promulgated by the EEA Secretary on December 31, 2009. Among other things, the plan identifies appropriate locations and performance standards for activities, uses, and facilities allowed under the Ocean Sanctuaries Act, which under certain circumstances includes energy-related facilities (except in the Cape Cod Ocean Sanctuary).

Energy Policy #2

Summary Statement

Encourage energy conservation and the use of renewable sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.

Policy Context

Energy conservation and renewable energy use are significant coastal management issues, particularly in the context of predicted growth in energy demand and advances in technology. Currently, most of the Commonwealth's energy needs are met through fossil fuel use. The burning of fossil fuels leads to significant increases of heat-trapping "greenhouse gases" in the atmosphere, increasing global temperatures, melting ice caps and glaciers, and warming ocean waters (causing them to expand). The results—rising sea levels and increased frequency and severity of storms—exacerbate shoreline erosion and increase coastal storm damage. Climate change impacts also include increased acidification and other changes in ocean chemistry, which alter marine habitats and impact marine organisms.

The Commonwealth imports all of its oil, natural gas, and coal via ship and pipeline. These transportation mechanisms carry the risk of accidental release of fossil fuels into coastal and ocean waters through leaks and spills, with potentially devastating consequences to marine ecology, fisheries, and recreational resources.

To minimize the impacts of fossil fuel use, Massachusetts has embarked on a series of energy reforms, which include improvements to the State Building Code to maximize energy efficiency, incentives to utility customers to improve conservation, and outreach and energy education programs to promote conservation and renewable energy use. To further address

concerns associated with fossil fuels, the Commonwealth has also developed renewable portfolio standards that will require increased usage of renewable energy within the state. Coastal and ocean areas will play an important role in ensuring that Massachusetts meets these renewable energy goals through the development of offshore wind. Other future marine-based renewable energy opportunities could include the generation of energy from tidal currents.

Key Policy Elements

CZM strongly endorses efforts to conserve energy and to develop alternative sources of power. To this end, CZM will cooperate with EEA, the Department of Energy Resources, Massachusetts Clean Energy Center, and others in implementing the Commonwealth's comprehensive energy conservation program, insofar as it relates to state activities within the coastal zone. In addition, CZM will support alternative energy source demonstration projects that may be proposed in the coastal zone, assuming that the proposed projects have minimal impacts on coastal resources and uses and will assist in locating appropriate sites and evaluating feasibility studies as appropriate.

Growth Management

The Commonwealth of Massachusetts and the Executive Office of Energy and Environmental Affairs have made significant efforts to manage community growth, particularly the effects of growth on environmental resources. Massachusetts is a "home-rule" state where most land use and zoning decisions fall under local control. The state, however, does have several tools, policies, and fiscal incentives available that seek to promote and support sustainable development. CZM supports these activities through the following three policies.

Growth Management Policy #1

Summary Statement

Encourage sustainable development that is consistent with state, regional, and local plans and supports the quality and character of the community.

Policy Context

Attractive village and town centers, vibrant urban neighborhoods, historic mill buildings, and extensive natural resources characterize many parts of Massachusetts. A major threat to these resources is poorly planned and constructed development that is both resource and energy intensive. Massachusetts is a home-rule state where cities and towns make the majority of land-use decisions. Consequently, all of the Commonwealth's cities and towns—

including the 78 coastal communities—need technical and financial support to help them address issues relating to sustainable development and preserving community character.

Key Policy Elements

Important elements of this policy are described below.

Massachusetts Sustainable Development Principles

The state has developed a set of Sustainable Development Principles that guide state agency policies and programs, as well as investments in land and infrastructure. The Principles include promoting clean energy, in the form of energy efficiency and renewable power generation; advancing the creation of “pedestrian-friendly” districts and neighborhoods that mix commercial, civic, cultural, educational, and recreational activities with parks and homes; conserving natural resources by reducing waste and pollution through efficient use of land, energy, water, and materials; and supporting the growth of local businesses, including sustainable natural resource-based businesses, such as agriculture, forestry, clean energy technology, and fisheries. Municipalities, through policies like Commonwealth Capital, are also asked to modify their planning, regulatory, and funding actions to achieve consistency with the Principles. In addition, through the Community Preservation Act (M.G.L. c. 44B) municipalities may establish a Community Preservation Fund from which moneys can be spent to preserve open space, protect historic structures, and provide low and moderate income housing.

Technical Assistance

CZM offers two types of assistance for promoting improved community preservation at the local level. These include:

- Project-specific assistance to local officials, developers, and property owners to provide input and recommendations on development siting, low impact development measures, best practices to enhance community preservation, and alternatives to mitigate adverse impacts.
- Assistance to communities for the development of local zoning bylaws, land-use controls, and methods for evaluating potential growth impacts and affected populations aimed at maintaining and enhancing community character.

In addition, CZM participates in MEPA and National Environmental Policy Act (NEPA) review processes to suggest how development can best be sited and designed to avoid adverse impacts.

Growth Management Policy #2

Summary Statement

Ensure that state and federally funded infrastructure projects in the coastal zone primarily serve existing developed areas, assigning highest priority to projects that meet the needs of urban and community development centers.

Policy Context

This policy focuses on federal and state investment into existing developed areas or adjacent areas suitable for development. Two types of public investment that have major impacts on growth and development are state and federally funded transportation improvements and sewage treatment and collection facilities.

Key Policy Elements

Important elements of this policy are described separately below for transportation improvements and sewage treatment systems and collection facilities.

Transportation Improvements

CZM will coordinate with the federal, state, and regional agencies involved in transportation planning to ensure that investments in transportation improvements serve to guide growth in a manner consistent with CZM program policies. Coordination between EEA and the Massachusetts Department of Transportation (MassDOT) will be achieved through transportation systems planning review and implementation of other CZM program policies through NEPA and MEPA reviews. In addition, under E.O. 385 Planning for Growth, all state-funded infrastructure projects are required to consider the growth impacts of the proposed project.

For transportation systems planning review, CZM will review, through the regional transportation plan and the Transportation Improvement Program, all major transportation projects for consistency with its policies. Major transportation projects are defined for purposes of this policy as those system projects that are above MEPA's mandatory EIR thresholds (301 CMR 11.25: Review Thresholds: Categorical Inclusions) or which:

- Provide new access to an area by means of an entirely new right of way.
- Increase the design capacity of a major transportation system more than 50% beyond its previously existing design capacity.

- Introduce a new transportation mode adding to the capacity of an area's total transportation system by more than 50%.

Review of these major projects will include consideration of anticipated changes in land development that may result from changes in transportation accessibility, particularly where development would be stimulated in rural, unserved, or open-space lands, or lands with environmental constraints. Projects will also be evaluated for conformance with the objectives and findings of other planning efforts in the region for highway projects or systems planning process for non-highway projects.

CZM may also make recommendations to mitigate adverse visual impacts and improve access to recreation facilities and provide trail linkups and access to recreational sites in conjunction with transportation improvements.

Sewage Treatment Facilities and Collection Systems

CZM will coordinate with federal, state, regional, and local entities responsible for waste treatment facilities planning, construction, and permitting to ensure that the location and design of treatment plants and sewage collection facilities encourage the consolidation of growth in existing developed areas. CZM prefers projects that remediate existing water quality problems or are located on previously developed sites to minimize the environmental impacts of such projects or treatment facilities that provide regional solutions to water quality problems. Pursuant to E.O. 385, CZM also works to ensure that infrastructure development does not result in, or contribute to, avoidable loss of environmental quality and resources.

Growth Management Policy #3

Summary Statement

Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and financial support for residential, commercial, and industrial development.

Policy Context

Closed shellfish beds and swimming areas, shrinking habitats for coastal species, rivers running dry before reaching the sea, working waterfront businesses displaced by expensive waterfront condos and other non-marine development, polluted runoff from sprawling subdivisions and suburban malls—many coastal management issues have a common link—historic and current land development patterns. These patterns are driven by a variety of factors, including land values, the abundance of natural resources, real estate market trends,

demographics, local ordinances, and community character. In addition, land supply and demand, public infrastructure, and zoning districts all play a role in directing growth and determining which municipalities experience high levels of development.

Without effective long-term planning, funding programs, and local implementation tools, new waterfront development can displace fishing docks, boat yards, and other water-dependent facilities vital to the coastal economy. Nonpoint source pollution from impervious surfaces, such as over-sized roads and parking lots, will cause contaminated runoff to be carried to the coast. Large-lot, sprawling, residential development will escalate erosion to an already fragile shoreline. Recognizing the connection between land and sea, CZM launched the Coastal Smart Growth Program to catalogue, develop, and distribute planning, technical, financial, regulatory, and outreach tools for real-world growth management that protects coastal resources.

Development is needed for the economic vitality of the state and to support a growing population, but not all development is appropriate or well executed. Providing for residential growth, fostering economic development, and protecting natural resources require proactive public policies that balance development with natural resource protection. Smart growth includes many elements with the overall goal of promoting better development and land-use practices that make sense from an environmental, cultural, and economic perspective. CZM focuses on three major growth management issues: growth management for water quality, growth management for shoreline protection and public safety, and growth management for water-dependent development. Protecting coastal water quality, improving shoreline and floodplain management, and promoting water-dependent economic development are CZM's growth management goals.

Key Policy Elements

Many federal and state programs provide grants and subsidies for new commercial and housing development or financial support for commercial and industrial investments. CZM supports those proposals for coastal communities that seek to:

- Enhance community and regional character by providing for the rehabilitation or adaptive reuse of older structures within existing urban and community development centers.
- Maximize use of existing or upgraded infrastructure investments consistent with the previous policy.
- Not preempt maritime-dependent uses of waterfront land.

In addition, there are a number of local zoning tools (e.g., cluster zoning, phased growth, and transfer development rights) that can be used to promote growth of existing centers,

preserve open space, and prevent sprawl development.

Habitat

The Massachusetts coastal program intends to protect coastal, estuarine, and marine habitats for their important ecosystem functions and human services while balancing other management interests. To accomplish this goal, CZM has developed two habitat policies that recognize and protect habitat and advance restoration of degraded habitats.

Habitat Policy #1 [enforceable]

Summary Statement

Protect coastal, estuarine, and marine habitats—including salt marshes, shellfish beds, submerged aquatic vegetation, dunes, beaches, barrier beaches, banks, salt ponds, eelgrass beds, tidal flats, rocky shores, bays, sounds, and other ocean habitats—and coastal freshwater streams, ponds, and wetlands to preserve critical wildlife habitat and other important functions and services including nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes.

Policy Context

Coastal habitats support the many living organisms—animals, plants, and microbes—inhabiting the lands and waters of the coastal zone and are the key building blocks of larger ecosystems. Coastal habitats also provide important “ecosystem services,” i.e., the beneficial uses and resources that accrue to society in the form of food, medicines, materials, atmospheric and climate regulation, tourism, aesthetics, and scientific understanding. Effective management and protection of habitats is imperative for the continued functioning of coastal ecosystems, the economic prosperity of the Commonwealth, and the health and welfare of its residents and visitors.

Coastal habitat can be classified broadly as either terrestrial (i.e., lying above the mean high water mark), intertidal (i.e., lying in between the high and low water marks), or submerged (i.e., lying beyond the low water mark). Terrestrial areas include portions of beaches and dunes above the high-tide line as well as barrier beaches, which are defined as a dune/beach system separated from the mainland by a narrow body of water or a salt marsh. Intertidal areas consist of salt marshes, tidal flats, beaches, and rocky intertidal shores, whereas submerged habitat includes the open ocean as well as estuaries that encompass salt ponds, rivers and creeks, and more expansive water bodies like bays and sounds. Submerged coastal habitats in general provide feeding areas, spawning and nursery grounds, and shelter for finfish, shellfish, and other marine fisheries.

Many submerged areas also serve as “fish runs” through which anadromous and catadromous fish pass back and forth between the ocean and inland water bodies for spawning purposes. Fish runs are important components of aquatic ecosystems generally, with the fish themselves being an important food source for other organisms throughout their life cycle. Moreover, their migrations provide a direct link between marine and freshwater ecosystems. This link plays a role in maintaining the overall productivity of fisheries that provide recreational and commercial benefits.

Salt ponds also provide important submerged and intertidal habitat, including spawning areas for shellfish and nursery areas for crabs and fish, as well as highly productive plants that serve as food for shellfish, crustaceans, and larval and juvenile fish. Also, many waterfowl feed on fish in salt ponds and eat invertebrates found there, such as polychaetes, mollusks, and crustaceans, which in turn depend on bottom sediment and vegetation.

The water column above submerged lands is also an integral part of the aquatic ecosystem as habitat in its own right, containing food-chain organisms like phytoplankton and free-floating algae. Other physical, chemical, and biological attributes such as depth, slope, stability, salinity, clarity, and primary productivity further characterize the diverse types of submerged coastal habitat. Finally, it is essential to appreciate that the productivity of submerged habitat is especially pronounced where the relevant attributes occur in conjunction with high water quality.

Much of the habitat value of underwater areas is attributable to the presence of submerged aquatic vegetation (SAV), which serves as prime spawning and nursery grounds for juvenile fish and provides an important source of food for some bird species. SAV is a useful umbrella term for a family of marine flora including (among other things) eelgrass (*Zostera marina*), widgeon grass (*Ruppia maritima*), kelp, and certain other marine plants. Submerged aquatic vegetation can be rooted or otherwise attached to the seabed or free-floating and is often “migratory” in the sense that its spatial distribution can change markedly over time. As a general rule, areas of the ocean where certain types of SAV (particularly eelgrass beds) have occurred historically may retain high recolonization potential, and thus may be considered to be viable habitat for purposes of this policy.

Intertidal coastal habitat is equally significant as the basis for a large food web that supports many marine organisms as well as birds. Salt marshes in particular produce large amounts of organic matter, a significant portion of which is exported as detritus and dissolved organics to estuarine and coastal waters. These areas also provide spawning and nursery habitat for several important forage finfish as well as food, shelter, breeding areas, and migratory and overwintering areas for many wildlife species. Similarly, tidal flats consisting of unconsolidated sediment (sand and mud) offer ideal habitat for organisms like polychaete worms and mollusks, which in turn are food sources for fish and migratory and wintering

birds; and below the drift line in the lower intertidal zone are infauna (invertebrates such as mollusks and crustaceans) that are eaten by shore birds. Sandy flats are also sites where organic and inorganic materials may become entrapped and then returned to the photosynthetic zone of the water column to support algae and other primary producers of the marine food web.

Rocky intertidal shores are habitat for macroalgae and marine invertebrates and provide protection to, and food for, larger marine organisms, such as crabs, lobsters, and fish, as well as a number of birds. Harbor seals use rocky intertidal shores, such as rock outcroppings or isolated shores of small islands, as haul-out areas. Most marine plants and animals found in rocky shore environments are uniquely adapted to survive there.

Intertidal (as well as submerged) lands provide ideal habitat for bivalve mollusks, another living marine resource that is both renewable and economically valuable. The maintenance of productive shellfish beds not only ensures the continuance of shellfish per se, it also plays a direct role in supporting fish stocks by providing a major food source. The young shellfish in the planktonic larval stage that are produced in large quantities during spring and summer are an important source of food for the young stages of marine fishes and many crustaceans.

Terrestrial coastal habitat supports an array of critical and valuable habitat functions. Beaches, dunes, and banks absorb storm and wave energy, protecting developed areas such as homes, businesses, and infrastructure, as well as highly productive salt marshes, wetlands, lagoons, and ponds. Terrestrial habitat areas are also important for their recycling of nutrients derived from storm drift and tidal action. Beaches and dunes are also extremely significant to avian wildlife, providing a range of habitat niches for nesting, foraging, resting, and staging.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Ocean Sanctuaries

The Ocean Sanctuaries Act protects five designated ocean sanctuaries “from any exploitation, development, or activity that would significantly alter or otherwise endanger the ecology or the appearance of the ocean, the seabed, or subsoil thereof.” The five ocean sanctuaries (Cape Cod Ocean Sanctuary, Cape Cod Bay Ocean Sanctuary, Cape and Islands Ocean Sanctuary, North Shore Ocean Sanctuary, and South Essex Ocean Sanctuary) collectively cover a large portion of state marine waters. The areas not covered are the ocean

area generally between Nahant (to the north) and Duxbury (to the south) and extending east to the extent of state waters and the ocean area of Mt. Hope Bay.

Ocean Management Plan Standards and Provisions

The Ocean Act of 2008 added a new section (4C) to MGL Chapter 21A that formally conferred the oversight, coordination, and planning authority of the state's ocean waters and ocean-based development to the EEA Secretary and required the Secretary to develop a comprehensive ocean management plan. The Ocean Act directed that this plan address specific objectives and that all state licenses, permits, and leases be required to be consistent to with the final plan.

The Ocean Act also modified the Ocean Sanctuaries Act in several ways, including the following:

- The OSA prohibition on the construction or operation of offshore or floating electric generating stations was modified to allow for renewable energy facilities of appropriate scale, consistent with the Massachusetts Ocean Management Plan and subject to other conditions, such as siting criteria and review by regional planning agencies as applicable.
- OSA oversight responsibility was transferred from the Department of Conservation and Recreation (DCR) to CZM.
- The Ocean Act mandated that the new Massachusetts Ocean Management Plan identify appropriate locations and performance standards for uses/activities/facilities allowed under the OSA.
- The OSA now includes the provision that any permit or license issued by any unit of EEA (and other affected agencies or departments) is subject to an ocean development mitigation fee, with the stipulation that no fee is assessed on commercial and recreational fishing permits or licenses. Proceeds of mitigation fees are to be deposited in an Ocean Resources and Waterways Trust.

On December 31, 2009, EEA promulgated the Massachusetts Ocean Management Plan. As contained in Appendix 5, the plan combines elements of both designated-area and performance standard-based management by establishing three categories of management area: Prohibited, Renewable Energy, and Multi-Use. In the Prohibited Area (which is coincident with the Cape Cod Ocean Sanctuary), the uses/activities/facilities prohibited by the OSA, as amended by the Oceans Act, are prohibited under the plan. Renewable energy facilities must adhere to strict compatibility criteria, and—for commercial-scale wind projects—facilities are allowed only in designated Renewable Energy Areas. In the Multi-use Area, uses/activities/facilities allowed by the OSA are managed based on siting and performance standards (associated with specific mapped resources and uses) that direct

development away from high value resources and concentrations of existing water-dependent uses.

The Massachusetts Ocean Management Plan establishes an elevated level of protection for special, sensitive, or unique (SSU) resources and important existing water-dependent uses. The plan contains both language and maps depicting the SSU resources that must be avoided by specific uses, activities, or facilities allowed by the OSA. The plan does not allow or disallow uses, activities, or facilities, but rather, pursuant to the Ocean Act, identifies with greater specificity and provides greater protection for those resources to be protected. Under the framework of the plan, the implementation of management standards occurs in review under the Massachusetts Environmental Policy Act—through the development of information necessary to characterize potentially affected resources and uses, evaluation of siting alternatives and impact minimization and mitigation—and through the administration of individual agency authorities.

Endangered Species

The Massachusetts Endangered Species Act (MESA) and regulations 321 CMR 10.00 protect rare species and their habitats by prohibiting the “taking” of any plant or animal species listed as Endangered, Threatened, or Special Concern. “Take” is defined as: “in references to animals to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding or migratory activity or attempt to engage in any such conduct, or to assist such conduct, and in reference to plants, means to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct. Disruption of nesting, breeding, feeding or migratory activity may result from, but is not limited to, the modification, degradation or destruction of Habitat.” With certain limited exceptions, projects or activities occurring in defined Priority Habitats are subject to review. Pursuant to MESA and its implementing rules, all state agencies are to use all practicable means and measures to avoid or minimize damage to such species or their habitats.

Wetlands Public Interests and Resource Area Protection

The Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40) serves to identify eight “public interest” functions that wetland areas provide, and it establishes regulations and performance standards to protect these functions. Any activity that will potentially affect a wetland area is to be regulated in order to contribute to the following interests:

- Protection of public and private water supply.
- Protection of groundwater supply.
- Flood control.
- Storm damage prevention.

- Prevention of pollution.
- Protection of land containing shellfish.
- Protection of fisheries.
- Protection of wildlife habitat.

On coastal lands subject to the WPA (land under the ocean, coastal banks, coastal beaches and tidal flats, coastal dunes, barrier beaches, rocky intertidal, salt marshes, land under salt ponds, Designated Port Areas, land containing shellfish, and land on the banks of fish runs) activities are approved, prohibited, or conditioned based on their effects on wetland functions and the public interests listed above. Review is required for any activity that will remove, fill, dredge or alter any wetland resource area—with “alter” being defined to include (among other things) the changing of certain habitat-related conditions, such as vegetation, water flow patterns or flushing characteristics, and/or the physical, biological, or chemical characteristics of receiving waters (e.g., temperature, salinity, and biological oxygen demand). The WPA regulations contain extensive damage prevention standards that are organized according to: (1) the type(s) of coastal wetland resource area in which a project is located; and (2) the habitat-related statutory interests that are declared (or presumed) to be significant within each area (i.e., protection of wildlife habitat and/or marine fisheries). The regulations also identify the characteristics of the respective resource areas that, if changed by a proposed project, may result in adverse effects on one or both of the habitat-related interests protected by the wetlands statute. In certain circumstances, the project can be approved only if it can be designed and carried out with “no adverse effect;” in others, the operative rule is that best available measures must be used to minimize adverse effects. “Best available measures” mean the most up-to-date technology or the best designs, measures, or engineering practices that are commercially available. It should be noted that under the WPA rules, no project may be permitted that will have any short- or long-term adverse effect on specified habitat sites of rare vertebrate or invertebrate species.

Wetlands Restrictions

The Inland and Coastal Wetland Restrictions Acts were enacted by the state legislature to enable the creation of permanent deed restrictions on mapped wetlands to provide additional protection to these areas. On lands that have been protected by the Wetlands Restriction Act, uses are generally restricted to conservation, outdoor recreation, shellfish harvesting, and other passive uses. Other permissible uses may include underground energy transportation lines and certain other utility lines, maintenance of existing roads and boat channels, and the construction of wharves, piers, boats, shelters, floats, and catwalks. Maintenance dredging is permitted. All other activities are generally prohibited. It is important to note that the uses allowed, prohibited, or limited may vary, so it is imperative to examine the actual language in the property deed.

Public Trust, Tidelands, and Waterways

The Massachusetts General Law Chapter 91 Waterways Program serves to protect the public's interest and rights in tidelands, great ponds, and rivers. The regulations (310 CMR 9.00) list the geographic areas and activities subject to jurisdiction, which can be summarized as including all tidelands, navigable rivers, great ponds, and filled tidelands (310 CMR 9.04), though landlocked filled tidelands are not in jurisdiction. Activities subject to Chapter 91 licenses or permits are listed in 310 CMR 9.05 and include:

- New fill or structures,
- Existing fill or structures not previously licensed,
- The alteration of existing fill or structures,
- Dredging projects,
- Beach nourishment projects,
- Mooring fields,
- Water level manipulations of Great Ponds, and
- New unlicensed uses of fill or structures in jurisdiction.

Review of an activity under Chapter 91 focuses initially on its water-dependency. The Waterways Regulations restrict new fill or structures in any coastal waterway (below the high water mark) for uses that are classified as either nonwater-dependent or accessory to water-dependent. Exceptions to this prohibition are few and include: replacement of existing, previously authorized filled or pile-supported structures; filling to eliminate irregularities in previously authorized filled areas, also on a 1:1 replacement basis; and certain shoreline stabilization and infrastructure modification activities. Nonwater-dependent projects can only be permitted if they meet three tests: they serve a proper public purpose, their benefits exceed their detriments, and they are consistent with CZM's enforceable program policies. In addition, specific performance standards apply to all jurisdictional activities. With respect to wildlife habitat, the operative standard is that the project shall not significantly disrupt any habitat within the proximate vicinity of the project site and shall include appropriate mitigation and/or compensation measures to avoid such disruption.

Discharge of Dredged or Fill Material

Under Section 401 of the federal Clean Water Act (33 U.S.C. 1251 et seq.), the state must certify that proposed discharges of dredged or fill material, dredging, and dredged material disposal in waters of the United States within the Commonwealth comply with state water quality standards and other appropriate requirements of state law. Among other things, state standards at 341 CMR 9.00 et seq. implement and supplement water quality standards at 314 CMR 4.00 et seq. by establishing requirements, standards, and procedures for the monitoring and control of activities involving discharges of dredged or fill material, dredging, and

dredged material disposal or placement; these standards also provide requirements for the evaluation of alternatives for these activities.

Generally, the discharge of dredged or fill material may occur only if: (1) there is no practicable alternative that would have less adverse impact on the aquatic ecosystem and there are no significant adverse environmental consequences to the discharge; and (2) appropriate and practicable steps have been taken to minimize potential adverse effects to land under the ocean. Aquatic ecosystem is defined broadly as waters of the United States within the Commonwealth, including wetlands, which serve as habitat for interrelated and interacting communities and populations of plants and animals. While certain exceptions to this standard can be made in the case of minor discharges, there is also a fail-safe requirement that no discharge is permissible in the circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface waters of the Commonwealth. CZM works with MassDEP to ensure that 401 Water Quality Certifications are consistent with its policies.

Habitat Policy #2 [enforceable]

Summary Statement

Advance the restoration of degraded or former habitats in coastal and marine areas.

Policy Context

Anthropogenic activities have resulted in the loss and degradation of many different types of natural habitats throughout the Commonwealth. For example, over the last 200 years, from approximately 1780-1980, it has been estimated that Massachusetts has lost nearly 28% of its wetland resources.² A recent investigation of trends—losses, gains, and changes—of tidal emergent and shrub-scrub wetlands, or “estuarine marshes,” for a study area that included Boston Harbor, Cape Cod, Nantucket, Martha’s Vineyard, and the Elizabeth Islands, found that from 1893 to 1995, over 8,200 acres of estuarine marsh were lost.³ While the study showed that rates of habitat loss slowed dramatically with the establishment of wetlands regulatory protection programs, unsuccessful compensatory mitigation and cumulative or secondary impacts continue to reduce both the quantity and quality of the state’s wetland resources and other coastal and marine habitats. CZM recognizes the wide array of ecological and human benefits that can be realized through the successful restoration of degraded habitats.

² Dahl, T.E. 1990. Wetland losses in the United States 1780s to 1980s. Washington, D.C.: US Fish and Wildlife Service, Branch of Habitat Assessment.

³ Carlisle, B.K., R.W. Tiner, M. Carullo, I.K. Huber, T. Nuerminger, C. Polzen, and M. Shaffer. 2005. 100 Years of Estuarine Marsh Trends in Massachusetts (1893 to 1995): Boston Harbor, Cape Cod, Nantucket, Martha’s Vineyard, and the Elizabeth Islands. Massachusetts Office of Coastal Zone Management, Boston, MA; U.S. Fish and Wildlife Service, Hadley, MA; and University of Massachusetts, Amherst, MA. Cooperative Report.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Ecological Restoration

In 1994, the Commonwealth established the Wetlands Restoration Program (WRP) within EEA. This program has two objectives: (1) engage in pro-active wetlands restoration and (2) explore options for wetland mitigation banking. To increase wetland acreage in the state and improve/restore the degraded or lost functions of altered/filled wetlands, the Wetlands Restoration Program relies on a partnership network to coordinate the components of a comprehensive restoration initiative.

In 2003, WRP was transferred to CZM, where continued progress was made to institutionalize the program and to enhance its capacity to support restoration. From 2003 through 2008, as a program within CZM, WRP helped partners complete 31 projects for 432 acres of wetlands under restoration. In addition, over 50 sites were accepted by the program as designated Priority Projects, offering the potential to restore over 2,000 additional acres of degraded and former wetlands.

In July of 2009, CZM's Wetlands Restoration Program and the Department of Fish and Game's Riverways Program were merged to create a new Division of Ecological Restoration (DER) within DFG. DER works with many partners across a variety of aquatic systems—from freshwater to saltwater—to restore the ecological integrity of degraded habitats using techniques such as culvert replacement, stream naturalization, and fill and dam removal. Emphasis is placed on projects that are self-sustaining and provide long-term benefits that assist in the recovery of habitats that have been degraded, damaged, or destroyed. CZM works with DER and other state habitat programs, such as the Natural Heritage and Endangered Species Program and the Division of Marine Fisheries, as well as a range of other partners including federal agencies, not-for-profit organizations, cities and towns, and private businesses and landowners to assist in all aspects of habitat restoration, including science, policy, planning, funding, and project implementation.

Minimization or Mitigation

Within the broad scope of environmental authorities, the restoration of former or degraded habitat is often available as an alternative for minimizing or mitigating otherwise unavoidable impacts. Under MEPA, for example, before an agency can issue a license or permit on a project subject to MEPA jurisdiction, it must find that all feasible measures have been taken to avoid damage to the environment or, to the extent such damage cannot be avoided, to

minimize and mitigate the damage to the maximum extent practicable. In the Wetlands Protection Act regulations, issuing authorities are afforded the discretion to impose conditions that will protect the statutory interests including the provision of mitigation measures, such as replication or restoration of resource areas. Under the 401 Water Quality Certification rules, no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken to avoid and minimize potential adverse impacts to bordering or isolated vegetated wetlands, land under water or ocean, or the intertidal zone, and for discharges to bordering or isolated vegetated wetlands, such steps shall include a minimum of 1:1 restoration or replication. Chapter 91 Waterways Regulations contain standards to preserve water-related public rights by requiring mitigation to ensure that all feasible measures are taken to avoid or minimize detriments to public rights, including the right to protect habitat and nutrient-source areas in order to have fish, fowl, or marine plants available to be sought and taken.

Ocean Resources

It is CZM's goal to manage the resources and uses of the Commonwealth's near and offshore waters to avoid adverse effects and incompatibility in order to protect the integrity of ocean resources and ecosystem services and to accommodate compatible and sustainable uses. This section includes three policies on aquaculture, marine mineral extraction, and sand and gravel extraction.

Ocean Resources Policy #1 [enforceable]

Summary Statement

Support the development of sustainable aquaculture, both for commercial and enhancement (public shellfish stocking) purposes. Ensure that the review process regulating aquaculture facility sites (and access routes to those areas) protects significant ecological resources (salt marshes, dunes, beaches, barrier beaches, and salt ponds) and minimizes adverse effects on the coastal and marine environment and other water-dependent uses.

Policy Context

Managed cultivation of shellfish and crustaceans in Massachusetts originated with the Native Americans and was adopted by the early settlers on Cape Cod. It was not until the 1970s and 1980s, however, that efficient and viable hatchery and grow-out techniques were proven effective on a larger, commercial scale.

CZM produced an Aquaculture White Paper and Strategic Plan for the state's fledgling aquaculture industry in the fall of 1995. This plan was produced in the wake of groundfish fishery collapses in the Northeast, rising interest in alternative sources of protein worldwide, and the immediate need to retain the fishing and fish processing traditions and jobs that had

long been an important sector of the local economy. Coincident with the increased interest in aquaculture in Massachusetts was the realization that the regulatory framework, strong traditions of “home rule” (municipal control), and public concern over aquaculture presented daunting obstacles to the development of this nascent industry.

The Aquaculture White Paper and Strategic Plan’s specific recommendations targeted at environmental impacts, regulatory framework, and economic development are being implemented by the multiple state agencies with an interest in and authority over aquaculture. The Department of Agricultural Resources (DAR) is the lead agency for aquaculture in Massachusetts and DMF and local natural resource officers are charged with primary regulation of aquaculture activities.

If not sited and managed appropriately, aquaculture may have a range of environmental impacts, including but not limited to: the introduction and spread of exotic species, degradation of sensitive coastal areas such as salt marshes and eel grass beds, localized water quality impacts, and disease introduction.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in the Appendix 3 - Coastal Program Legal Authorities.

Ocean Planning

Proposed aquaculture facilities located within the defined Ocean Management Planning Area, are subject to the Massachusetts Ocean Management Plan, which was promulgated by the EEA Secretary on December 31, 2009. According to the plan, the maps and siting and performance standards will assist in the site review and regulatory process, which includes evaluation of water quality, benthic habitat, submerged aquatic vegetation, endangered species, competing uses, navigation, access, and other topics.

Harbor Planning

To the extent possible, proposed aquaculture facilities should conform to local harbor or sub-harbor resource management plans. In many cases, these plans identify areas that are suitable for aquaculture activities and areas that should be precluded from aquaculture development due to sensitive habitat, presence of endangered species, user conflicts, high recreational use, wild fishery, and other related factors.

Review of Aquaculture Projects

State regulations at 322 CMR 15.00 establish a procedural and legal framework for marine aquaculture, including the possession, propagation, culture, sale, and disposition of living marine organisms. The primary objectives of the regulations are to: regulate the possession, transport, and sale of marine organisms for purposes of aquaculture; establish operational guidelines for aquaculture facilities; establish aquaculture license categories and procedures; and provide a code of conduct for responsible marine aquaculture in the territorial waters of Massachusetts. It is intended that the regulations will facilitate the development of a viable marine aquaculture industry, while protecting wild populations of marine organisms and their natural habitat from degradation or introduction of invasive aquatic species, parasites, or diseases.

The following guidelines, derived from relevant state policies and regulations (largely those of DMF, MassDEP, and CZM), apply to all aquaculture projects within the coastal zone or potentially affecting state uses and resources. To further these policies and regulations, the Commonwealth will:

- Ensure that aquaculture (and access to such) is not practiced on privately owned tidelands (or uplands) without the express consent of the owner of record.
- Encourage siting of aquaculture facilities in areas where they will not adversely impact local marine resources or traditional commercial and recreational uses.
- Ensure that upland/upstream activities do not degrade aquaculture facilities and that aquaculture facilities do not degrade downstream water quality or in situ benthic ecology.
- Reduce inappropriate institutional, social, technical, and economic barriers restricting aquaculture.
- Ensure that environmental review of proposals is comprehensive yet appropriate to the level of proposed risk.
- Require the use of technologies and species that are compatible with local conditions and do not threaten the biological diversity of our marine waters.
- Require that predator species are controlled using non-lethal measures.
- Encourage the use of best management approaches as a means of avoiding the transmission of disease between cultured and wild populations or stressing cultured and wild species.
- Require coordination with designated authorities and the marking of facilities as appropriate to avoid and minimize hazards to both recreational and commercial navigation.
- Ensure that facility siting, design, and operation do not harm migratory birds, especially rare or declining shorebirds, and marine mammals.

- Require the use of best management approaches to minimize the risk of introduction and spread of non-native species.

As required by the Massachusetts Ocean Sanctuaries Act, for aquaculture projects within Ocean Sanctuaries, DFG and CZM must be satisfied that the practices are carried out in accordance with sound conservation practices.

Ocean Resources Policy #2 [enforceable]

Summary Statement

Except where such activity is prohibited by the Ocean Sanctuaries Act, the Massachusetts Ocean Management Plan, or other applicable provision of law, the extraction of oil, natural gas, or marine minerals (other than sand and gravel) in or affecting the coastal zone must protect marine resources, marine water quality, fisheries, and navigational, recreational and other uses.

Policy Context

Although there is not an extensive history of offshore mineral extraction in Massachusetts, there are offshore mineral resources in or adjacent to state waters and submerged tidelands that could become economically or strategically attractive in the future. Any evaluation of offshore mineral extraction must take into consideration the avoidance or minimization of impacts to natural resources, water quality, and human uses of marine resources. These resources include traditional fishing grounds and spawning areas, recreational areas, navigation routes, and the quality of coastal waters and habitats.

Exploratory oil and gas development on George's Bank in the early 1980s raised many concerns, principally conflicts with fisheries and potential impacts of release or spill. Since that exploration, the North Atlantic area has not been included in any of the 5-Year Programs developed by the Bureau of Ocean Energy Management (BOEM), formerly the Minerals Management Service, under the Outer Continental Lands Act. Congressional action and Presidential orders have kept the North Atlantic Planning Area under moratoria since the early 1980s, but at time of publication, these bans are no longer in place.

Other types of mineral resources may exist in recoverable amounts offshore from the Massachusetts coast, although little exploratory work has been done and no extraction has been proposed.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in

accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Exploration and Extraction in State Waters

Extraction of oil, natural gas, and marine minerals (other than sand and gravel, in certain circumstances) is explicitly prohibited by the Ocean Sanctuaries Act in the Commonwealth's five ocean sanctuaries, which cover all state waters with the exception of the ocean area of Mt. Hope Bay and the ocean area generally between Nahant (to the north) and Duxbury (to the south) and extending east to the extent of state waters. As contained in Appendix 5, proposed extraction and exploration activities are also strictly limited by the Massachusetts Ocean Management Plan, which contains specific standards and provisions to protect special, sensitive, and unique estuarine and marine resources as well as water-dependent uses. Further, all certificates, licenses, permits, and approvals for any proposed structures, uses, or activities within such area must be consistent to the maximum extent practicable with the plan. Proposals for mineral extraction will be evaluated for consistency with these restrictions and the other CZM program policies.

Outer Continental Shelf Exploration and Extraction

CZM exercises its authority to review Outer Continental Shelf leasing, sale, exploration, and exploitation proposals submitted to the U.S. Department of the Interior for consistency with its policies. In addition, proposals for pipelines, pipeline rights-of-way, platforms, transportation, and all associated landside facilities will be reviewed for consistency with these policies. As noted above, extraction of oil and gas resources is precluded by the Ocean Sanctuaries Act in all state ocean sanctuaries and where allowed projects must protect sensitive natural resources and water-dependent uses of the Commonwealth.

Review of Exploration and Extraction Activities

CZM will review proposals for oil and gas exploration and extraction to ensure that:

- Standards protecting special, sensitive, and unique estuarine and marine resources and water-dependent uses are met.
- Construction in or affecting Areas of Critical Environmental Concern conforms to applicable regulations.
- Risks of environmental harm to critical habitat, including threatened and endangered species and fish spawning areas, are assessed and avoided or minimized.
- Necessary dredging, dredged material disposal, and construction of structures avoid or minimize damage to the marine environment.
- Risks of oil and gas spills and possible trajectories are evaluated and appropriate

protection measures taken.

- Potential damage to or interference with fishing grounds is evaluated and avoided.
- Placement of structures in geologically hazardous areas is avoided, thereby minimizing such risks as pipeline breakage.
- Disposal of drilling muds and drill cuttings does not damage marine habitat, including spawning areas and fishing resources.
- Potential harm to wintering, nesting, or migratory stopover areas for wildlife is assessed and minimized.
- Placement of on-shore support facilities is situated in developed port areas.

OCS National Policy

CZM is involved in National minerals extraction planning and policy through representation on the OCS Policy Committee. The OCS Policy Committee advises the Secretary of the Interior on matters relating to OCS planning, leasing, and exploration. CZM regularly comments on BOEM Program Plans and is the lead agency in the state regarding OCS activity.

Ocean Resources Policy #3 [enforceable]

Summary Statement

Accommodate offshore sand and gravel extraction needs in areas and in ways that will not adversely affect marine resources, navigation, or shoreline areas due to alteration of wave direction and dynamics. Extraction of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment or shoreline stabilization.

Policy Context

Coastal communities in Massachusetts are vulnerable to erosion and flooding as the primary coastal hazards that lead to the loss of lives or damage to property and infrastructure in developed coastal areas. In developed areas, especially where engineering structures are used to stabilize shorelines, natural sediment transport processes are interrupted, and under conditions of reduced sediment, the ability of coastal resource areas such as dunes and beaches to provide storm damage prevention and flood control benefits is continually reduced. Climate change and sea level rise will also contribute to coastal land loss in the Northeast. With an accelerated rate of sea level rise, low-lying coastal areas will be particularly vulnerable to increased erosion, flooding, and inundation. In addition, these impacts will extend farther inland, resulting in greater loss of land and damage to development along the coast of Massachusetts. The combination of rising sea levels, more frequent and intense storms, and increased coastal development will result in greater erosion

and flooding impacts over time. As options for climate change adaptation are considered and strategies developed, interest in ocean sand and gravel resources for protection will increase.

While extensive sand and gravel resources exist in the submerged lands of Massachusetts state waters and in the adjacent OCS, the extraction of these resources for beach nourishment or shore protection needs to be balanced with the protection of marine ecosystems, with particular attention to sensitive or vulnerable areas like critical spawning or juvenile fish habitat.

Removal of nearshore material must not lead to increased erosion or other adverse changes to the shoreline. Active interaction, or sediment exchange, occurs between an open-ocean beach and the nearshore region out to approximately the 30-foot bathymetric contour under severe storm conditions. This sediment exchange or interaction is necessary for the system to maintain a dynamic equilibrium, which in turn provides maximum storm wave energy dissipation. Removing large volumes of material from this zone will act to increase the velocity and height of storm waves, thereby allowing storm waves to break further landward and to adversely impact shoreline areas.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Limits on Uses for Offshore Sand and Gravel Extraction

Extraction of sand and gravel from the seabed or subsoil, except for the purposes of shore protection or beach restoration, is prohibited within state Ocean Sanctuaries. More broadly, additional restrictions may apply in the event such extraction is proposed within the Ocean Management Planning Area. The Ocean Act of 2008 requires that all certificates, licenses, permits, and approvals for any proposed structures, uses, or activities within such area be consistent to the maximum extent practicable with the Massachusetts Ocean Management Plan, which was promulgated on December 31, 2009. As contained in Appendix 5, among other things, the plan identifies appropriate locations and performance standards for activities, uses, and facilities allowed under the Massachusetts Ocean Sanctuaries Act, which (as noted above) permits marine extraction of sand and gravel only if the purpose is either shore protection or beach restoration.

Siting Factors

As contained in Appendix 5, the Massachusetts Ocean Management Plan establishes an elevated level of protection for special, sensitive, or unique resources and important existing water-dependent uses. The plan contains both language and maps depicting the SSU resources that must be avoided by specific uses, activities, or facilities allowed by the OSA. Under the framework of the plan, the implementation of management standards occurs in review under the Massachusetts Environmental Policy Act—through the development of information necessary to characterize potentially affected resources and uses, evaluation of siting alternatives and impact minimization and mitigation—and through the administration of individual agency authorities. In addition to the standards contained in the Massachusetts Ocean Management Plan, the following locational guidelines are important in the siting of sand and gravel extraction activities:

- Extraction should not occur in marine areas that serve as sources of sediment supply for coastal beaches or in areas where alteration of bottom contours would adversely modify wave and current patterns affecting shoreline areas. Generally, these areas will be landward of the 60-foot contour. Whereas active interaction (sediment exchange) exists between the beach and nearshore out to approximately the 30-foot bathymetric contour under severe storm conditions, extraction of areas landward of the 30-foot bathymetric contour should generally be prohibited.
- Extraction should not occur in areas where contaminated dredge material or other hazardous substances have been deposited.
- Extraction should not occur within a specified distance of submarine cables and pipelines.
- Other than beneficial re-use from navigational dredging projects, extraction should not occur in navigation channels or anchorages.

Ports and Harbors

It is CZM's intent to ensure that the Commonwealth waterways and port resources are maintained and improved by the least environmentally damaging practicable alternatives. To accomplish this objective, CZM has developed policies concerning dredging and disposal of dredged material, priorities for channel dredging, Designated Port Area management, protection of water-dependent uses along the waterfront, and the promotion of additional improvements to developed ports.

Ports and Harbors Policy #1 [enforceable]

Summary Statement

Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity, and public health and take full advantage of opportunities for beneficial re-use.

Policy Context

Dredging is necessary to maintain recreational and commercial access to the waterways of the Commonwealth. Dredging supports significant recreational and commercial activity and provides the means by which a significant segment of the population is able to experience and directly benefit from access to the resources of the coastal zone. Recognizing this, the state, in addition to regulating the potential impacts to resources of dredging projects, is also charged with maintaining and improving the navigability of waterways.

The necessity and benefits of dredging must be balanced against the potentially significant impacts that dredging and disposal activities can have on aquatic resources. Dredging and disposal can:

- Impact significant marine habitat, such as salt marsh, eelgrass, and land containing shellfish, either through direct removal or physical alteration of sediments.
- Alter water circulation patterns, bathymetric contours that directly affect wave activity, and the flood storage capacity of coastal areas.
- Impact water quality through releases of chemical contaminants with potentially acute and/or chronic impacts.
- Impact the migration or spawning of fish and shell fish through the physical resuspension of sediment.

The impacts associated with the ad hoc disposal of dredged material can be significant. Management of dredged material is therefore generally restricted to disposal at state or federally designated aquatic disposal sites, placement of coarse-grained material on beaches as nourishment material, reuse as cover or shaping material at landfills, or disposal as waste at landfills. The Commonwealth's goal is to manage dredged material as a resource and to dispose of dredged material as a waste only when no beneficial use is practicable.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Dredging Operations

In the siting and operation of dredging projects, damage to the environment and public health shall be minimized by ensuring that projects will not cause:

- A significant increase in the volume or velocity of water that may cause flooding resulting from alterations in the bottom morphology of an estuary, embayment, or other tidal waters.
- Significant adverse effect on the flood-storage capacity of a wetland, river, stream, or creek.
- A significant increase in flood or erosion hazards or significant adverse effect on the natural replenishment of beaches resulting from changes in sediment transport processes.
- A permanent change in circulation patterns, which will result in a significant adverse change in flushing rate, ambient salinity, temperature, and turbidity levels.
- Any significant removal of shellfish beds except as allowed through consultation with the Division of Marine Fisheries.
- Any degradation of water quality that would result in a violation of water quality standards, contamination of recreation waters or marine food sources, or contamination or depletion of public or private groundwater supply (including aquifers and recharge areas).
- Any significant permanent adverse effects on marine productivity resulting from suspension or transport of pollutants or other substances, blanketing of organisms, bio-accumulation of pollutants by organisms, or habitat or nutrient source area destruction.

The following general provisions shall also apply to the siting and operation of dredging projects:

- Timing limitations for dredging shall be determined on a case-by-case basis to minimize impacts to diadromous fish runs.
- Conflicts with recreational activity or other activities occurring within the water body to be dredged shall be minimized.
- Dredging of contaminated sediments shall be undertaken with new-generation, tight-sealing bucket dredges or other appropriate equipment that minimizes, to the greatest degree practicable, the suspension or resuspension of material in the water column.

Dredged Material Management

While the impacts associated with dredging can be significant, the disposal of dredged material also poses great potential for impacts to coastal resources and uses. Standards governing the disposal of dredged material reflect advances in science and technology and provide guidance for alternative management methods (such as confined aquatic disposal and alternative technologies).

The Commonwealth is committed to ensuring the beneficial use of dredged material where

feasible. Beneficial use opportunities are greatest for projects that generate coarse-grained materials for beach nourishment, but other opportunities exist for cost-effective reuse alternatives. For uncontaminated material, management options consist of: testing under state and federal protocols to determine its chemical content, analyzing potential reuse alternatives (typically as a landfill cover), and if no feasible reuse alternatives are available, placing the material at a state or federally designated aquatic disposal site (e.g., the Massachusetts Bay Disposal Site or the Cape Cod Disposal Site). For contaminated, fine-grained materials, reuse opportunities are restricted; if no practicable reuse alternative exists, this material can be disposed of as waste in an upland landfill or may be considered for confined aquatic disposal. No unconfined aquatic disposal of contaminated material is allowed.

Testing procedures for evaluating the sediments to be dredged for potential impacts on disposal-site environments shall be determined by consultation with agencies and in accordance with guidelines and regulations and the following:

- *Regional Implementation Manual for the Evaluation of Dredged Material Proposed for Disposal in New England Waters* (USEPA/USACE, 2004), also known as the “RIM.”
- *Evaluation of Dredged Material Proposed for Ocean Disposal: Testing Manual* (USEPA/USACE, 1991), also known as the “Green Book,” for disposal in Marine Protection, Research and Sanctuaries Act (MPRSA) §103 (ocean waters).
- *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S.: Inland Testing Manual* (USEPA/USACE, 1998), also known as the “TTM,” for disposal in CWA §404 (inland waters).

Disposal Sites and Methods

The unconfined ocean disposal of contaminated dredged material in or affecting the waters of the Commonwealth is prohibited. In 2006, the state legislature prohibited the disposal, deposit, or redeposit of dredged materials in any portion of Buzzards Bay, except for use in a beneficial reuse project. Such reuse projects may include beach nourishment, salt marsh restoration, dune restoration, or use as capping material for underwater contamination. If ocean disposal is proposed at a site other than the Massachusetts Bay Disposal Site, the Cape Cod Disposal Site, or currently permitted nearshore sites, such sites shall be identified through a screening process that determines suitable areas based on an analysis of fisheries resources, chemical and physical oceanography, economical haul distances, alternative disposal options, and need. In general, aquatic disposal of uncontaminated, fine-grained material shall be restricted to designated sites. Monitoring of all aquatic sites is required; for state-designated disposal sites, such as the Cape Cod Bay Disposal Site, DCR is charged with management and monitoring responsibilities, subject to the recommendations of the Disposal Site Advisory Committee, chaired by CZM.

Beneficial use of dredged material should be favored over upland or aquatic disposal and alternatives should be explored on a project-by-project basis. Clean, sandy, dredged material

should be used for beach nourishment if a suitable nourishment site can be identified. For publicly funded projects, sandy material must, except in extraordinary circumstances, be used for beach nourishment; material from private projects should be used for beach nourishment if feasible.

Special Areas

The potential benefits and impacts of dredging projects in special areas should be evaluated in the context of the location and the purpose for which the Area of Critical Environmental Concern (ACEC) or Designated Port Area (DPA) was designated.

ACECs are dedicated to the protection of outstanding natural resource areas; accordingly, projects are held to a high standard of environmental review. Improvement dredging for navigational purposes is prohibited, as is the disposal of dredged material except for the sole purpose of environmental enhancement. Maintenance projects in ACECs shall minimize adverse impacts to resources subject to protection under the Wetlands Protection Act.

DPAs are dedicated to the protection and enhancement of urban, maritime, industrial activities. The environmental regulation of dredging projects in DPAs presumes that land under the ocean is significant to marine fisheries, storm damage prevention, and flood control. Projects in DPAs must minimize adverse impacts to these interests using the best practical measures. If other resources subject to protection under the Wetlands Protection Act are determined to be significant, projects in DPAs must use the best available measures to minimize adverse impacts.

Ports and Harbors Policy #2 [enforceable]

Summary Statement

Obtain the widest possible public benefit from channel dredging and ensure that Designated Port Areas and developed harbors are given highest priority in the allocation of resources.

Policy Context

Adequate channel depths are a prerequisite for many kinds of water-dependent activity. Given that public funding for dredge projects is limited, allocation of these funds should prioritize projects that provide the greatest public benefit and demonstrate the most pressing need. DPAs are land and water areas with certain physical and operational features that have been reserved by the Commonwealth for maritime-industrial uses. These areas have important state, regional, and national significance with respect to the promotion of commercial fishing, shipping, and other vessel-related activities associated with water-borne

commerce and to manufacturing, processing, and production activities reliant upon marine transportation or the withdrawal or discharge of large volumes of water. While many of the state's most developed harbors are DPAs, there are many other harbors where navigation channels must be maintained for commerce and port functions, fishing, recreation, or maritime safety and security. This policy reflects the goal of maximizing use of these areas that are already suited for port and harbor activities over the development of new areas (with associated economic and environmental costs).

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Dredging Priorities

In the allocation of resources for dredging, priority should be given to DPAs and to developed harbors. Developed harbors are defined as those that meet at least one of the following characteristics:

- Provide public mooring space, berths, slips, ramps, and docks that serve a region-wide boating public, as evidenced by either public access to the harbor that is free or open for nominal fee to non-residents and has adequate parking facilities or considerable boating traffic;
- Host harbor facilities used by commercial fishermen;
- Serve cruise boats, ferries, and other marine industry; and/or
- Present unique development opportunities for the fishing industry or for waterfront renewal and revitalization.

In port areas and developed harbors, maintenance dredging should be given highest priority for public assistance. Publicly funded maintenance dredging will be scheduled so that projects demonstrating the most pressing need, widest public benefit, and least environmental damage are carried out first.

The allocation of resources to deepen or expand channels, mooring areas, or turning basins beyond depths or sizes to which they were initially dredged will be approved if the project meets two of the following criteria:

- Provides broad public benefits for recreational boating and is necessary to minimize or avoid navigational or operational conflicts between commercial or official vessels and recreational boaters;

- Enhances benefits to the commercial fishing industry;
- Produces economic returns to maritime shipping and other maritime industries by reducing turn-around times and in-harbor transit delays and permits usage of more efficient-sized vessels; and/or
- Reduces navigational safety risks.

The allocation of resources for the creation of new channels, mooring areas, or turning basins of 20-foot depth or greater will be approved only if the project serves a commercial navigation purpose of state, regional, or federal significance and cannot reasonably be located in DPAs.

Ports and Harbors Policy #3 [enforceable]

Summary Statement

Preserve and enhance the capacity of Designated Port Areas to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which an EEA agency exerts control by virtue of ownership or other legal authority.

Policy Context

The Commonwealth's Designated Port Area policy was established in 1978 within the Massachusetts Coastal Zone Management Plan after extensive consultation with state agencies, elected officials, municipal planners, non-government organizations, representatives from the business community, local citizens, and others. In 1979, MassDEP incorporated DPA rules into its Waterways Regulations, with provisions to protect water-dependent industrial uses on the water-side areas of DPAs. In 1984, the legislature expanded the Chapter 91 licensing authority to include filled tidelands, and DPA jurisdiction was extended to include upland areas. In 1990, the Chapter 91 regulations were modified to enhance protection of water-dependent industrial uses within DPAs.

DPAs are land and water areas with certain physical and operational features that have been identified to have particular state, regional, and national significance with respect to the promotion of commercial fishing, shipping, and other vessel-related activities associated with water-borne commerce and to manufacturing, processing, and production activities reliant upon marine transportation or the withdrawal or discharge of large volumes of water. The two central principles of the state's DPA policy are to promote water-dependent industries as an important sector of the state's economy and to prevent the loss of areas that have key characteristics. While water-dependent industrial uses vary in scale and intensity, they all generally share a need for infrastructure with three essential components: (1) a waterway and associated waterfront that has been developed for some form of commercial navigation or

other direct utilization of the water; (2) backland space that is conducive in both physical configuration and use character to the siting of industrial facilities and operations; and (3) land-based transportation and public utility services appropriate for general industrial purposes. This combination of attributes is found in a very limited and diminishing portion of the coastal zone, and particularly few areas are of sufficient contiguous extent to invite concentrations of related businesses and/or large scale facilities. Because economic, environmental, and social factors now virtually preclude further development of such an intensive nature, what remains of the industrialized coast should be preserved to the maximum extent practicable in order to meet the long-term, cumulative space needs of water-dependent industries. State policy seeks to protect these areas from the irretrievable commitment to, or significant impairment by, non-industrial or nonwater-dependent types of development, which enjoy a far greater range of locational options.

Accordingly, the thrust of the state's DPA policy is to maximize use of areas already suited for port areas and avoid the conversion of these areas to incompatible residential, commercial, and recreational uses so that future marine industrial uses would not have to develop new areas for such use. The expense of developing new marine industrial locations—including costs associated with dredging, bulk-heading, dock building, and development of transportation, power, and water infrastructure—is very high in terms of both economic and environmental costs, not to mention the public and political opposition that frequently accompany such proposals.

There are 11 DPAs, located (all or in part) in the following 14 communities: Gloucester, Salem, Beverly, Lynn, Revere, Chelsea, Everett, Boston, Quincy, Weymouth, Fairhaven, New Bedford, Fall River, and Somerset. Maps showing the current boundaries of individual DPAs are available from CZM.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Control of Development on DPA Tidelands

The Chapter 91 Waterways Regulations (310 CMR 9.00) strictly limit the placement of fill or structures in DPAs to water-dependent industrial and accessory uses. Allowable water-dependent industrial uses are defined within the Chapter 91 Waterways Regulations. The rules also address “Supporting DPA Uses,” which are industrial or commercial uses that provide direct economic or operational support to water-dependent industrial use in the DPA and are compatible with activities characteristic of a working waterfront and its

backlands, in order to preserve in the long run the predominantly industrial character of the DPA and its viability for maritime development. Supporting DPA Uses are generally limited to no more than 25% of the area, but short-term or interim uses are allowed under a temporary, 10-year license and without significant structural alterations. Modification of the Supporting DPA Use percentage limit is possible through the development and Secretarial approval of a municipal DPA Master Plan, as described in the Designated Port Area Master Plans section below.

Maintaining Flexible Protection for Water-Dependent Industrial Uses

Preservation of essential port infrastructure does not mean that DPAs should be treated as “land banks” in which space not presently utilized for water-dependent industry is entirely off-limits to other productive enterprise. To the contrary, the long-term viability of DPAs for maritime commerce actually depends to a certain degree on maintaining flexibility to utilize at least a portion of vacant port properties for nonwater-dependent or non-industrial purposes. Under the right circumstances, where appropriate measures are taken to minimize exclusionary effects, such development activity can provide economic or operational support that can be instrumental in helping water-dependent industries locate or stay in a DPA.

In addition, on many port properties it is desirable for new development to incorporate an element of public access to promote public awareness and appreciation of maritime industrial activities. Despite the somewhat gritty character of many working waterfronts, there is no reason for DPAs to be places that separate a community from its harbor. With careful attention to the layout and design of individual projects, it is often feasible to weave pedestrian accessways into industrial districts without jeopardizing public safety or causing operational interference. Accordingly, the general intent of this policy is to allow small-scale pedestrian facilities in appropriate DPA locations, usually either seasonally or when port operations and pedestrian access will not conflict or in the form of “point” accessways running perpendicular to the shoreline. Public access objectives, however, must not interfere with port development interests if there is a conflict between public safety in an industrialized area and pedestrian access. For this reason, lateral walkways are generally not allowable along any DPA shoreline that is suitable for commercial vessel activity.

Community development objectives other than the promotion of water-dependent industry can be pursued to a considerable extent within a DPA. Nevertheless, it is important to recognize that meaningful safeguards are needed to ensure that such “non-conforming” activity does not significantly impair the ability of the DPAs to serve the primary state and regional interests for which they were established.

Operational Compatibility

The capacity of a DPA can be diminished when a proposed project directly interferes with or otherwise disrupts or detracts from the operation of a water-dependent industry. To avoid significant conflict, it is important that the type, location, scale, duration, operation, and other relevant aspects of redevelopment projects be compatible with activities characteristic of a working waterfront and its backlands. Residential uses are inappropriate in this regard and are categorically prohibited in a DPA, whereas nonwater-dependent industrial uses generally are presumed to meet the test of compatibility. Commercial uses are evaluated on a case-by-case basis, except for those which inherently give rise to severe conflict with port operations or excessive consumption of port space, either directly or indirectly (e.g., as a result of collateral development activity). These include:

- Transient group quarters, such as hotels/motels, nursing homes, and hospitals.
- Large-scale recreational boating facilities.
- Amusement parks and other major entertainment or sports complexes.
- New buildings devoted predominantly to office use.

Projects involving new or expanded development of these uses are not allowable in a DPA.

Limited Occupancy

DPA capacity to support water-dependent industrial uses can also be impaired through preemption, which entails an irretrievable commitment of space with attributes that are of primary importance in attracting maritime development to the DPA. Such space encompasses not only deep-water navigation areas and water-side docking facilities, but also nearby shorelands that provide room for staging, storage, vehicular movement, and other forms of operational support. To avoid significant preemption, the following minimum limitations on the extent and/or duration of nonwater-dependent industrial uses have been adopted:

- Nonwater-dependent uses may not occur in any spaces or facilities with attributes that are necessary to maintain the utility of the project site for prospective water-dependent industrial use, especially that for which it is among the most suitable in the harbor in question; at a minimum, new or expanded structures for such use are categorically excluded within a specified setback distance from the water's edge.
- The total area occupied by commercial uses and/or non-maritime industry (including ancillary uses such as parking) is limited to a minority portion of the land area on a project site; for most projects the site coverage limit is 25%, although somewhat greater amounts of general industry may be allowable on a temporary basis (up to 10 years) or as part of a predominantly maritime industrial complex; in addition, an even higher density of non-port development on individual sites can be authorized by an

approved DPA Master Plan (as discussed further in the Designated Port Area Master Plans section below).

- Generally, no structures may be built or altered that cannot be subsequently removed or converted to water-dependent industrial use with relative ease; also, conditions governing the duration of tenancy or other mechanisms may be established to ensure that nonwater-dependent activity occurs in a manner that preserves adequate flexibility over time to accommodate water-dependent industrial uses as future needs arise.

Designated Port Area Master Plans

CZM encourages pro-active planning for DPAs to promote maritime development, prevent commitments to uses that would significantly exclude water-dependent industrial activity, and accommodate supporting industrial and commercial uses in a conflict-free manner. Under municipal harbor planning regulations at 301 CMR 23.00, communities are able to develop DPA Master Plans for review and approved by the EEA Secretary. Approval of a DPA Master Plan is governed by regulatory criteria that are designed to produce state and local agreement as to the roster of prohibited and allowable uses within various segments of the DPA, as well as strategies for the cooperative promotion of water-dependent industrial use. A DPA Master Plan must comply with a set of universal standards governing consistency with CZM program policies and planning guidelines, compatibility with the plans and projects of other state agencies, and consistency with state tidelands policy objectives as set forth in the Waterways Regulations of MassDEP

Determination of Designated Port Area Boundaries

Under the Designation of Port Areas regulations at 301 CMR 25.00, CZM is responsible for mapping, interpreting, and periodic review of DPA boundaries. The boundaries of DPAs are established by CZM in accordance with written criteria governing the suitability of contiguous lands and waters to accommodate water-dependent industrial use, as appropriate to the harbor in question. As a general rule, CZM applies the suitability criteria in the context of groups of parcels that form coherent planning units, rather than to individual project sites or other properties under common ownership or control. DPA-related attributes typically vary across different parcels, such that the combined characteristics of associated parcels in the same general vicinity are not reflected accurately in the characteristics of any single property. For this reason, it is important that geographic areas proposed to be included in (or removed from) a DPA be sized and configured in a manner that allows consideration of all relevant factors affecting overall suitability to accommodate water-dependent industrial use.

Ports and Harbors Policy #4 [enforceable]

Summary Statement

For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.

Policy Context

Maintaining the waterfront infrastructure necessary to support fishing, shipping, passenger transportation, recreational boating, and other maritime activities is challenging given limited resources. These challenges are compounded by the continued interest and demand to use waterfront areas for residential and commercial development, which may not be entirely compatible with water-dependent uses. The Commonwealth is fortunate to have a key legal tool for the protection and promotion of vessel-related infrastructure along the shoreline, in the form of M.G.L. Chapter 91, the Public Waterfront Act, and its implementing regulations at 310 CMR 9.00 (Waterways Regulations). Among other geographic areas, these authorities govern permitting of all projects involving proposed use changes or structural alterations on any tidelands subject to the public trust doctrine, which encompasses both present (“flowed”) and former (“filled”) submerged lands and intertidal areas. In its 1983 amendments to Chapter 91, the legislature established a core mandate that tidelands be “utilized only for water dependent uses or otherwise serve a proper public purpose,” and since that time a primary objective of licensing has been to safeguard the waterfront at work. To this end, the Waterways Regulations contain a variety of explicit provisions that support the following four basic principles:

- Limited Occupancy - Restrictions must be placed on the spatial extent (amount and/or location) of nonwater-dependent uses.
- Operational Compatibility - The use type, building scale, and other design and programming aspects of nonwater-dependent projects must be compatible with activities characteristic of water-dependent uses along the immediate waterfront.
- Shoreline Activation - All nonwater-dependent projects at waterfront sites must provide at least one facility that generates water-dependent activity appropriate to the nature of the project, conditions of the waterbody, and other relevant circumstances.
- Support through Diversification - Operators of water-dependent uses are afforded certain flexibility to utilize a portion of their waterfront properties for nonwater-dependent development that provides economic or operational support, which can be instrumental in helping maritime business thrive and/or remain at high-value shoreline locations.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Preventing Loss of Capacity for Water-Dependent Use

The Chapter 91 Waterways Regulations contain several provisions designed to conserve tideland capacity to accommodate future water-dependent uses by limiting new fill and structures for nonwater-dependent use on flowed tidelands and development of housing, offices, and other private uses that are incompatible with water-related public interests. The primary provisions of the Waterways Regulations that address these objectives are:

- On flowed tidelands, no new fill or structures are allowed for nonwater-dependent use (except on a one-for-one replacement basis), and existing piers may be redeveloped for nonwater-dependent use but only if the use is also a facility of public accommodation.
- On filled areas, new or expanded buildings for nonwater-dependent use must be set back from water's edge by 25 to 100 feet, depending on the depth of the lot, and are subject to specific density controls.
- Private residences and other facilities of private tenancy are generally excluded not only from piers over water but also from ground-floor interior spaces within 100 feet of the shoreline.

It should be noted that several of these dimensional and use restrictions are subject to modification by an approved Municipal Harbor Plan.

Preventing Conflicts with Existing Water-Dependent Use

The Waterways Regulations contain specific requirements that seek to “preserve the availability and suitability of tidelands... and other waterways that are in use for water-dependent purposes.” One requirement is that the project may not significantly interfere with another littoral or riparian property owner's right to approach their property from a waterway and vice versa, and in the case of a proposed structure that extends perpendicular to the shore, it must be located at least 25 feet away from abutting property lines wherever feasible. Another important provision is that the project shall not significantly disrupt any water-dependent use in operation, as of the date of license application, at an off-site location within the proximate vicinity of the project site. Projects must include appropriate mitigation and/or compensation measures if such disruptions cannot be avoided entirely. Additionally, the rules hold that no proposed project may displace any water-dependent use that has occurred on the site within five years prior to the date of license application, with two

exceptions: (1) if the use did not take place on a reasonably continuous basis for a substantial period of time; and (2) if the use has been or will be voluntarily discontinued at the site by the user, for reasons unrelated to the proposed project or as a result of voluntary arrangements with the applicant. Unless the exceptions clearly apply, reasonable arrangements must be made for the water-dependent use to continue at its existing facility, or at a facility at an alternative location “having physical attributes, including proximity to water, and associated business conditions which equal or surpass those of the original facility.” Otherwise, only temporary relocation may occur as necessary for project construction.

Promoting Expansion of Water-Dependent Use

The Waterways Regulations also contain measures that seek to promote water-dependent development in the Commonwealth, including:

- The allowance for water-dependent projects to include a certain amount of “accessory” uses that can add to the overall profitability of the principal business without triggering standards that would otherwise apply to such uses if developed separately.
- The requirement that development of any nonwater-dependent project on waterfront sites must provide “one or more facilities that generate water-dependent activity, with prime consideration given to facilities that promote active use of the project shoreline, such as boat landing docks and launching ramps, marinas, fishing piers...and water-based public facilities [such as] ferries, cruise ships, water shuttles, public landings and...excursion/charter/rental docks, and community sailing centers.”
- Restrictions on nonwater-dependent projects on former submerged lands if a determination is made that the project site is necessary to accommodate a public agency that intends to pursue a water-dependent project on such lands, provided the agency meets the eligibility criteria for standing as a “competing party.”

Ports and Harbors Policy #5

Summary Statement

Encourage, through technical and financial assistance, expansion of water-dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of physical and visual access.

Policy Context

To accommodate the increasing needs of fishing, shipping, and other marine industries, cruise and ferry services, and recreational boating interests, existing Massachusetts ports and harbors will require considerable improvement and expansion of their facilities (e.g., docks, piers, bulkheads, ramps, navigational aids, and other harbor works) in addition to dredging. Assistance from state and federal funding sources is usually required to enable municipalities to undertake such improvements.

Key Policy Elements

By taking advantage of the visual and other recreational assets of waterfront areas, many coastal communities are undertaking major redevelopment initiatives in formerly deteriorated downtown areas and require state and federal assistance for joint developments including waterfront parks, housing, retail shops, and restaurants. The mixture of these uses along the waterfront can provide innumerable opportunities to the general public for visual and physical access to the waterfront and are therefore encouraged by CZM, provided they do not conflict with port operations. In conjunction with such renewal efforts, physical measures that provide views of marine-dependent activities, and port operations in general, are particularly supported by CZM since these activities have significant educational and interest value as integral elements of the coast's visual resources. Such measures are also in keeping with EEA policy on community preservation, especially in cities and towns with a traditionally strong seaport identity.

In 1996, the Commonwealth of Massachusetts passed a Seaport Bond bill, which is designed to fund port and harbor infrastructure improvements. CZM participates in the development and implementation of spending priorities for these funds. CZM supports funding from state and federal sources when requested by coastal municipalities for projects consistent with CZM program policies. In addition, technical assistance from CZM is available to provide help in analyzing and resolving port and harbor development problems.

Protected Areas

It is CZM's intent to protect recognized complexes of marine resources by ensuring that activities in or affecting such areas avoid or minimize adverse effects. Three policies addressing Areas of Critical Environmental Concern, Scenic Rivers, and historic districts implement CZM's goals for these protected areas.

Protected Areas Policy #1 [enforceable]

Summary Statement

Preserve, restore, and enhance coastal Areas of Critical Environmental Concern, which are complexes of natural and cultural resources of regional or statewide significance.

Policy Context

The Massachusetts Areas of Critical Environmental Concern Program provides protection for complexes of natural and cultural resources of statewide significance by: heightening the level of state regulatory review given to development proposals; promoting state, regional, and local planning and coordination; and providing technical assistance to develop and implement the goals of resource management plans for ACECs. As of 2010, a total of 14 ACECs are located in the coastal zone. These coastal ACECs are described and located in the *Coastal Atlas* and on the ACEC program website at www.mass.gov/dcr/stewardship/acec/index.htm. Values that can be conserved through the program are listed in the ACEC Regulations, 301 CMR 12.00, as follows:

- Fishery habitat.
- Coastal features (barrier beaches, beaches, dunes, rocky intertidal).
- Estuarine wetlands.
- Inland wetlands.
- Inland surface waters.
- Water supply areas.
- Natural hazard areas (floodplains, erosional areas).
- Agricultural areas.
- Historical/archeological resources.
- Habitat resources.
- Special use areas (natural areas, public recreation areas, scenic areas).

When the original CZM program plan was promulgated in Massachusetts, CZM served as the lead state agency for nominating and designating coastal ACECs. ACECs are equivalent to Areas of Preservation and Restoration, described in the federal Coastal Zone Management Act. For many years, the primary focus of the ACEC program was on important coastal resources, in large part due to CZM's authority over the program. There are, however, a number of inland resource complexes that are of statewide significance. To recognize the statewide importance of this program, CZM, DCR, and the EEA Secretary signed a Memorandum of Understanding in 1993, giving primary authority for the administration of the ACEC program to DCR. CZM works in close cooperation with DCR

to review nominations and designate coastal ACECs, and to implement ACEC designations.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Nomination and Designation of Areas of Critical Environmental Concern

Any 10 citizens of the Commonwealth of Massachusetts, board of selectmen, city council, mayor, planning board, conservation commission, state agency, regional planning agency, the Governor, or any member of the legislature may nominate an ACEC. The EEA Secretary designates ACECs after a comprehensive environmental assessment and public review process.

Through ACEC designation, regulatory and resource protection standards are enhanced for projects proposed in ACECs under such authorities as MEPA, the Wetland Protection Act, and Chapter 91 Waterways Regulations. Certain activities, such as improvement dredging and new pier construction, are prohibited until the specific activity is incorporated into a Resource Management Plan approved by participating municipalities and the EEA Secretary.

Such designation also warrants a review of the classifications in Massachusetts Water Quality Standard Regulations for the water body segments within the ACEC complex in order to maintain high water quality. If the proposed ACEC has had adverse anthropogenic impacts, increased designation may not initially be appropriate, but may be a goal of the ACEC Resource Management Plan.

Control of Activities in ACECs

The designation of an area as an ACEC does not prohibit or eliminate existing uses or prohibit development in general. However, the areas are protected through prohibition of specific activities that may damage the resource complex, including certain activities proposed to be located below mean high water within the water bodies comprising the ACECs. Some examples of categorically prohibited activities include the following:

- New industrial discharges and the discharge of hazardous substances (if the water segments are classified anti-degradation).
- New dredging except for maintenance of existing channels or for enhancement of shellfish and other marine productivity.
- Disposal of dredged material, except in instances when the material may be used for beach nourishment, dune stabilization, or marsh creation.

- Direct discharges from new sewage treatment facilities (if the water segments are classified anti-degradation).
- Siting of new municipal sewage treatment plants.
- New construction of private piers and docks for recreational boating, unless such structures are consistent with an ACEC resource management plan adopted by the municipality and approved by the EEA Secretary.

If activities are proposed for an area outside but adjacent to or affecting the ACEC, applicants are required to demonstrate that the proposed activity will not adversely affect the characteristics cited in the official designation of the area. In addition, the Energy Facilities Siting Board, in conducting its review of energy facilities proposed in ACECs, gives prime consideration to the need to prevent adverse environmental impacts in these areas.

ACEC designation also triggers other special protection measures for the area, including:

- A higher performance standard under the Wetlands Protection Act of “no adverse effect” to Coastal Resource Areas, except that maintenance dredging of land under the ocean for navigational purposes is allowed.
- A higher performance standard under the Wetlands Protection Act for Bordering Vegetated Wetlands (BVW).
- Prohibition of the siting of new solid waste facilities pursuant to the Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00).
- Prohibition of the siting of low level radioactive waste storage facilities.
- High priority for receipt of state open space acquisition funds granted to municipalities, and for acquisition and management by the Department of Fish and Game (as a state wildlife area), DCR (as a state forest or park), and DAR (as an agricultural preservation restriction).
- Higher priority in MassDEP’s ranking of hazardous waste sites (21E) targeted for remediation.

The authorities to provide protection to wetland resources within ACECs include provisions regarding review of proposed developments on lands contiguous to wetlands, with the additional protections specified in the Wetlands Protection Act regulations for ACECs noted above. Tidelands licensing is used to prohibit new fill for any use and dredging/dredge material disposal, and to limit encroachment of privately owned structures in ACEC waters in the absence of a resource management plan specifically allowing such structures.

Resource Management Plans

When an ACEC is nominated for protection, specific resources are cited for their unique value. Two resource management plans have been approved as of 2010 (for the Neponset

River ACEC in 1996 and the Pleasant Bay ACEC in 1999). CZM encourages the development of resource management plans through the provision of technical assistance to DCR and municipalities and, when available, through the provision of funding for plan development

Nomination and designation of ACECs in urbanized areas present some unique challenges, particularly in the remediation of hazardous waste sites and the restoration of degraded natural and cultural resources. CZM, DCR, MassDEP, and municipal agencies work together to resolve cross-jurisdictional regulatory matters that may impede the restoration of resource complexes in the more developed areas of the state.

Protected Areas Policy #2 [enforceable]

Summary Statement

Protect state designated scenic rivers in the coastal zone.

Policy Context

The coastal rivers of Massachusetts are noted for their recreational and aesthetic values; however coastal watersheds are the most intensely developed areas of the state. Scenic values and recreational activities may be threatened by residential, commercial, and industrial development. The Commonwealth works to recognize and preserve these resources.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

State Designated Scenic Rivers

Under Section 11C of MGL 21A, and implementing rules at 302 CMR 3.00 et seq., the state may designate certain rivers and streams of the Commonwealth (or portions thereof) and contiguous land areas on either side of the natural bank of such river as Scenic and Recreational Rivers and Streams. The designation is accomplished by the adoption of orders that impose restrictions on the designated Scenic and Recreational Rivers and Streams prohibiting certain specified activities and uses while allowing other specified activities and uses. Orders are recorded in the registry of deeds or in the registry district of the land court of each county in which the river corridor is located.

As part of the state Scenic Rivers Program, DCR conducted an extensive inventory and classification of the state's rivers. Of the 180 rivers nominated for designation, 46 rivers or river segments were identified as eligible for inclusion in the state's scenic rivers system, including several in the coastal zone. While no action has been taken to date to pursue state designation of these river corridors, they include significant scenic and recreational resources worthy of protection. The classification carries no regulatory implication but indicates that these river segments include significant scenic qualities that should be protected to the maximum extent possible. DCR currently supports community-based greenway and river corridor protection efforts through the provision of small grants and technical assistance to municipalities, watershed associations, and non-profit conservation organizations. CZM cooperates with DCR and support state and local efforts to protect the unique resources of these rivers within the coastal zone.

In 1978, the North River in the towns of Scituate, Marshfield, Norwell, Hanover, Hanson, and Pembroke was designated as a state scenic river pursuant to M.G.L. c. 21, § 17B: Scenic and Recreational Rivers Act. In accordance with this law, a river management plan was prepared, and a Protective Order regulating uses and activities on the river and within a 300-foot corridor along each bank was developed and recorded at the Plymouth County Registry of Deeds. The Protective Order acknowledges the significance of the North River and sets forth regulations to preserve and protect the natural, scenic, and recreational resources of the river corridor. The Protective Order also establishes the North River Commission, which reviews development proposals within the corridor and administers the regulations set forth in the order. CZM works with DCR and the North River Commission to protect the North River.

Protected Areas Policy #3 [enforceable]

Summary Statement

Ensure that proposed developments in or near designated or registered historic places respect the preservation intent of the designation and that potential adverse effects are minimized.

Policy Context

The coastal zone contains significant cultural and historic resources. Symbols of the state's maritime heritage are evident along the shoreline in the form of customs houses, lighthouses and fortifications, wharves, boat yards, marine railways, and ship captain's, fishermen's and merchant's homes. Many of these historic structures are included in the Inventory of Historic Assets of the Commonwealth, and some have been listed in the National Register of Historic Places in recognition of their cultural significance and their contributions to local, regional, and national history. The overall importance of these coastal historic resources depends not only on their maritime connections but also on important settings that are

significant character-defining features. Maritime cultural resources also include famous ships of a wide variety of types, from the Constitution to the Ernestina to the USS Massachusetts, and the historic lightships. In addition, the cultural value of the maritime setting is particularly significant to the Commonwealth's indigenous Native American peoples and to many ethnic immigrant groups, to whom ocean resources are not only still important economically but also linked inextricably with ongoing maintenance of traditions in language, folklore, and religion.

The Massachusetts Historical Commission (MHC) maintains the Inventory of Historic and Archaeological Assets of the Commonwealth, which includes records of historic districts, buildings, sites, areas, structures, bridges, objects, specimens, burial grounds, streetscapes, parks, and landscapes. The inventory consists of paper and computerized records including indices, maps, files, and reports. These data come to the MHC from many sources, chiefly local historic commissions and local historic district commissions, as well as through cultural resource surveys. MHC is currently digitizing the Inventory of Historic and Archaeological Assets of the Commonwealth as funding and staffing allows.

Impacts to shore-based historic resources can occur directly or indirectly from development activity: physically, visually, audibly, or atmospherically. New development projects with state or federal involvement are reviewed in consultation with MHC and with other consulting parties.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Historic Places in Coastal Zone

Pursuant to Section 26C of MGL c.9, the state maintains a list of historic places contained in the State Register of Historic Places (which includes all districts, sites, buildings, or objects determined eligible for listing or listed in the National Register of Historic Places).

For purposes of this policy, the geographic scope of “near” is defined as parts of abutting properties, properties directly opposite on any public street or way, or any other property to the extent proposed developments on any of these are within 300 feet of the historic place.

Projects that require funding, licenses, or permits from any state agency are evaluated, the effects of such projects on historic places are assessed, and through consultation adverse effects are avoided, minimized, or mitigated.

Public Access

It is CZM's intent to promote, maintain, and improve efforts to help the public get to and enjoy the coast and coastal zone. Currently, CZM implements three policies to achieve this objective.

Public Access Policy #1 [enforceable]

Summary Statement

Ensure that development (both water-dependent or nonwater-dependent) of coastal sites subject to state waterways regulation will promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.

Policy Context

While government ownership of waterfront lands for public recreation has traditionally been the most effective means of expanding public access to the coast, since the early 1990s the level of agency expenditures on acquisition programs has declined dramatically in the face of budget cuts and increasing prices for coastal frontage, coupled with a scarcity of undeveloped properties with significant park potential and willing sellers. As a result, for decades the portion of coastal frontage in public hands for recreation has remained essentially unchanged, at less than 30% of the total Massachusetts shoreline. When shoreline parcels are added to the public estate, moreover, they are often located away from the most densely populated regions of the coast—where the mismatch between supply and demand for public beaches/parks has been chronic—and are sometimes acquired mainly for conservation purposes, with little or no public access allowed.

In addition to acquisition, CZM places emphasis on alternative approaches to enhancing coastal access. One strategy is to focus on partnering with private owners of shorefront properties to establish legal entitlements to pedestrian trails (variously described as “beachwalks,” “harborwalks,” “ways to the sea,” and so forth) leading to and along the water's edge, with associated recreational infrastructure to be provided depending on the context. Such public passageways are intended at a minimum to be used for passive recreation, including strolling, scenic viewing, and fishing; and in more urban settings for additional leisure pursuits appropriate to the harbor in question, such as passenger boating, dining and shopping, and staging performing arts events. In any case, the operative principle is that government need not own the coast in order for the public to use and enjoy it, even where development has already occurred.

The Public Waterfront Act (M.G.L. c.91, aka “Chapter 91”), which dates to the mid-1800s, is particularly well-suited to act on this principle. This statute codifies the Public Trust Doctrine, which originated in the Roman Empire, was passed down through English common law to the American colonies, and has since continued to evolve in keeping with the respective legal traditions of each coastal state. The essence of the doctrine is that tidelands⁴ and the overlying waters of the ocean are held (i.e., owned) by the state in trust for the common benefit of the public, especially for navigation, fishing, and any other water-related commercial and recreational activities in which all citizens are free to engage. The general public thus has expansive trust-protected rights in tidelands property, and it is the solemn responsibility of government to exercise effective stewardship on behalf of this unique public interest.

For preserving and enhancing coastal access, tidelands law in Massachusetts presents major opportunities but also a significant constraint in the form of the Colonial Ordinances of 1641-47. This early law transferred ownership of tidelands between the high and low water marks (with a maximum separation of about 1,650 feet) to coastal landowners, in order to encourage private wharf construction over this intertidal area. Mindful of their duty as trustees, however, the colonial legislators did not relinquish all public interests in these so-called “private tidelands;” instead, they specifically reserved for the public the right to continue using the intertidal area for three activities—fishing, fowling, and navigation. Since then, state courts have ruled that the scope of activities covered by these reserved rights is broad and includes all “natural derivatives,” including lateral foot travel passage over private land to access tidelands for trust-protected activities. At the same time, the courts have insisted that the public right to use privately owned intertidal lands does not include the right to simply stroll, sunbathe, or otherwise engage in general recreation—activities now of great social significance and protected elsewhere in the country where most tidelands are still in public ownership to the high water line.

A counterpoint to the restrictive scope of public rights on private tidelands is that the Massachusetts courts have been extremely progressive in interpreting the Public Trust Doctrine as it applies to “Commonwealth Tidelands,” historically consisting of submerged lands (and portions of the intertidal zone in some cases) lying beyond the seaward property line of private tidelands. In 1979, the Supreme Judicial Court (SJC), in the case of *Boston Waterfront Development Corp. v. Commonwealth*, ruled that the public’s full proprietary interest in submerged lands had not been extinguished by the placement of fill material in the waterway to create new shoreland. Rather, the court declared that even though the legislative grant allowing the fill was 150 years old, the created land still carried an “implied condition subsequent” that it continue to be used for a public purpose.

⁴ “Tidelands” in Massachusetts are defined by statute as “present and former submerged lands and tidal flats lying below the mean high water mark” and therefore encompass both lands presently subject to tidal action (flowed tidelands) and those where the presence of fill has eliminated tidal action (filled tidelands).

This consequential pronouncement (and another in 1981⁵) ushered in a new era in state stewardship of tidelands, with the next milestone being legislative passage in 1983 of corresponding amendments to Chapter 91. Most importantly, these amendments included a new provision requiring a license for any new or previously unauthorized change of use or structural alteration on filled tidelands. By virtue of this requirement, jurisdiction of the waterways regulatory program in effect “came ashore” along virtually the entire waterfronts of all the urbanized harbors in the state (in Boston, Gloucester, New Bedford, and several other coastal communities), which were created mostly through historic filling in coastal waterways. Then, responding to this expansion of the geographic area and scope of activities subject to state permitting authority, in 1990, MassDEP, with CZM assistance, completed a major rewrite of its prior regulations governing the licensing of projects on tidelands, putting in place a comprehensive scheme for controlling near-shore development on both filled and flowed tidelands.

With these interpretations of contemporary lawmaking based upon the Public Trust Doctrine, Massachusetts has markedly improved the state’s capability to promote public access to the coast.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Overview of the Commonwealth’s Approach to Public Trust, Tidelands, and Waterways Issues

As of the 1984 amendments, the central objective stated in Chapter 91 is that of “ensuring that the tidelands are utilized only for water-dependent uses or otherwise serve a proper public purpose,” and this core statutory mandate has been used in licensing all fill and structures on any type of tidelands. In the case of Commonwealth tidelands, the legislature elaborated the proper public purpose test with the stipulation that fill and structures for any use must be determined to provide greater benefit than detriment to the rights of the public in such tidelands. Finally, with the intent of heightening scrutiny of projects involving nonwater-dependent uses, the amended law applied this benefit/detriment test to such projects on private tidelands as well, and further stipulated that the determination of proper public purpose must be consistent with CZM policies.

⁵See *Opinion of the Justices to the Senate*, in which the court stated that any transfer or relinquishment of tideland rights held by the Commonwealth was subject to a rigorous five-part test, thus expanding on the obligations of the legislature and establishing a framework for judicial oversight.

Charged with implementing these broad legislative directives, MassDEP's Waterways Regulation Program acts in accordance with regulations at 310 CMR 9.00 (Waterways Regulations). As stated in the Preamble that accompanied promulgation in 1990, "the[se] regulations contain numerous initiatives designed to enhance the state's stewardship of tidelands and other waterway areas.... [H]owever, the most important features [include] providing public access for use and enjoyment of the waterfront." Accordingly, virtually every license application MassDEP now approves for shorefront property development includes conditions that require public access benefits, of a kind and to a degree that depends on the extent of private and/or nonwater-dependent activity proposed (or existing, in the case of previously unauthorized fill and structures). At a minimum, such benefits typically include creation of a lateral accessway at the water's edge for public pedestrian use and, frequently, connecting "perpendicular" accessways as well. The regulatory provisions governing public access to the shoreline, for water-dependent project, nonwater-dependent projects, and areas accessible to the public, are discussed below.

Access-Related Standards for Water-Dependent Projects

Although Chapter 91 promotes water-dependent uses as a public purpose, appropriate measures must still be taken to uphold the public rights of fishing, fowling, and navigation that exist within present and former intertidal areas that are privately owned. Moreover, in specifically requiring a benefit/detriment determination for any use of Commonwealth tidelands, the legislature has acknowledged that to some extent water-dependent facilities necessarily occupy such tidelands to the exclusion of the public-at-large and that compensation should be obtained for any adverse effects on public property rights. Accordingly, the Waterways Regulations include a number of provisions that are intended to secure appropriate access-related benefits even for water-dependent use of trust-protected space along the water's edge. The following is a summary of the key standards governing each type of tidelands in general.

- For Private Tidelands: The project must not significantly interfere with public rights to walk or otherwise pass freely on private tidelands for purposes of fishing, fowling, navigation, and the natural derivatives thereof. On flowed private tidelands in particular, continuous, on-foot, lateral passage by the public in the exercise of these rights is required wherever feasible, and any pier, wharf, groin, jetty, or other structure within the zone must be designed to accommodate such passage. As a general rule, the structure must either maintain at least a five-foot clearance above the ground along the high water mark or provide a stairway for the public to pass laterally over such structures. Where obstruction of continuous access below the high water mark is unavoidable, the project must provide lateral passage elsewhere.
- For Commonwealth Tidelands: Any fill or structures for private water-dependent use of Commonwealth tidelands must provide compensation to the public for interfering

with its broad rights to use such lands for any lawful purpose, “including strolling, swimming, and other recreational activities.” Such compensation must take the form of appropriate measures to promote public use and enjoyment of the water, at a location on or near the project site if feasible, and must be commensurate with the extent of interference caused. On filled Commonwealth tidelands, a project must allow some form of public passage on the site itself, either laterally along portions of the shoreline or transversely to a point on the shoreline, by such means as are consistent with the need to avoid undue interference with the water-dependent use.

Standards have been developed that specify requirements for recreational boating facilities (RBFs). The most common type of water-dependent project involves RBFs extending into flowed Commonwealth tidelands, ranging from individual private piers to yacht clubs and commercial marinas with docking facilities for tens to hundreds of vessels. The regulations pay particular attention to such projects and set forth the following series of additional access-related requirements:

- If the facility meets the definition of a Public RBF (i.e., all berths are available for patronage by the general public on a seasonal or transient basis), all exterior pedestrian facilities on the project site must be open to the general public, except where access restrictions are necessary to avoid significant interference with the operation of the facility or to maintain security at slips, ramps, floats, and other docking facilities.
- If the facility is a private pier or otherwise has fewer than 10 slips and meets the definition of a Private RBF (i.e., berths are not entirely available for public patronage or available for exclusive use on a long-term basis), the project must make reasonable arrangements to accommodate public pedestrian access along or to the water’s edge. Generally, such access must be provided by establishing a lateral accessway at or near the high water mark wherein the public may pass freely—including recreational strolling—across the seaward end of the property from dawn to dusk.
- If the facility has ten or more slips (“marina”) and meets the definition of a Private RBF, additional arrangements must be made to provide water-related benefits to the public commensurate with the scale of the facility. Examples of such benefits include construction of a public boat launching ramp, operation of an ongoing program of community sailing or boating instruction, dedication of a substantial number of berths to public transient use, and provision of public pedestrian facilities beyond those required elsewhere in the regulations.

Access-Related Standards for Nonwater-Dependent Projects

Under the Chapter 91 regulatory approach, expectations for compensatory access benefits are greatest where private development of tidelands is proposed for nonwater-dependent

purposes, such as housing, office, retail, and restaurant use. With such development being generally prohibited on new fill or structures on any flowed tidelands, projects subject to this category of access-related standards are typically located on filled tidelands or (in certain circumstances) on existing pile-supported structures. To the extent the project site includes present or former submerged lands or other Commonwealth tidelands, the Waterways Regulations stipulate that nonwater-dependent projects must promote public use and enjoyment to a degree that is fully commensurate with the proprietary rights of the Commonwealth in such lands, and which “ensures that the private advantages of use are not primary but merely incidental to the achievement of public purposes.” For portions of the site consisting of filled private tidelands, where authorization to fill historically served the public interest in promoting water-dependent use but served to diminish the practical exercise of trust-protected rights, conversion to nonwater-dependent use triggers requirements that are intended to restore the public’s ability to engage in fishing, fowling, and navigation to the extent such is feasible, and obtain other access-related compensation to the extent it is not.

Based on these general principles of responsible stewardship, the Waterways Regulations contain numerous provisions governing public access to nonwater-dependent project sites. These provisions fall into two basic categories: (1) conserving capacity for water-dependent use, especially use involving active and passive public recreation; and (2) requiring activation of spaces along and near the water’s edge with walkways and other facilities of public accommodation (FPAs).⁶ Each set of standards is summarized below.

Conservation of Capacity for Water-Dependent Recreation

Any nonwater-dependent project must demonstrate that it will not unreasonably diminish the capacity of tidelands on the project site to accommodate water-dependent use and public access associated therewith. In implementing this broad objective, the Waterways Regulations include controls on two key variables in waterfront development: the allowable density/layout of nonwater-dependent buildings and the allowable penetration of residential uses and other facilities of private tenancy (FPTs)⁷ in ground-level spaces both within and external to such buildings. In both cases the general rule is that the dimensional characteristics and the use program of the project must be such as to prevent significant incompatibility in design and/or conflict in operation with structures and spaces for public recreation or other water-dependent activity on the project site.

⁶FPA means a facility at which goods or services are made available directly to the transient public on a regular basis, or at which advantages of use are otherwise open on essentially equal terms to the public at large rather than restricted to a relatively limited group of specified individuals, and as further defined in the c.91 regulations.

⁷FPT means a facility at which the advantages of use accrue, on either a transient or permanent basis, to a relatively limited group of specified individuals rather than to the public at large, and as further defined in the c.91 regulations.

The Waterways Regulations identify several aspects of nonwater-dependent use programming that may give rise to user conflict and several aspects of built form that may give rise to design incompatibility. Among the latter, for example, is the configuration of buildings “insofar as it may affect existing and potential public views of the water, marine-related features along the waterfront, and other objects of scenic, historic or cultural importance to the waterfront, especially along sight lines emanating in any direction from public ways and other areas of concentrated public activity.” Visual impact is inherently qualitative and site-specific and cannot easily be addressed through objective standards of performance, nor can many of the factors related to potential user conflict. Nevertheless, there are certain key parameters for which minimum thresholds can be quantified to prevent undue encroachment by nonwater-dependent development at the expense of public use and enjoyment of the waterfront. Four such thresholds are established in the Waterways Regulations, summarized as follows:

- *Setback requirement to ensure certain buildings/facilities are not constructed immediately adjacent to the project shoreline:* “New or expanded buildings for nonwater-dependent use, and parking facilities at or above grade for any use, shall not be located within a water-dependent use zone [WDUZ]... in order that sufficient space along the water’s edge will be devoted exclusively to water-dependent activity and public access associated therewith...” The WDUZ is an area running landward and parallel to the project shoreline with a width ranging from 10’-100’, depending generally on average lot depth and other parameters.
- *Site coverage limit to ensure buildings will be relatively condensed in footprint:* “At least one square foot of the project site at ground level [excluding open water areas] shall be reserved as open space for every square foot of tideland area within the combined footprint of buildings containing nonwater-dependent use...in order that an amount of open space commensurate with that occupied by such buildings will be available to accommodate water-dependent activity and public access associated therewith.”
- *Height limit to ensure buildings will be relatively modest in scale:* “New or expanded buildings for nonwater-dependent use shall not exceed 55’ in height if located over the water or within 100’ landward of the high water mark,” and may add 1 additional foot in height for every 2 additional feet of separation, “...in order that wind, shadow, and other conditions of the ground level environment will be conducive to water-dependent activity and public access associated therewith.”
- *FPT restriction to ensure no significant privatization of waterfront areas immediately adjacent to the water-dependent use zone will occur:* “Nonwater-dependent facilities of private tenancy shall not be located on any pile-supported structures on flowed tidelands, nor at the ground level of any filled tidelands within 100 feet of a project shoreline...in order that such areas will be generally free of uses that conflict with, preempt, or otherwise discourage water-dependent activity or public use and enjoyment of the water dependent use zone.”

It should be noted that MassDEP has the flexibility to waive any of these dimensional and use restrictions in favor of a municipal alternative, known as a “substitution,” if the alternative requirement is more appropriate for the harbor in question as demonstrated in a Municipal Harbor Plan. To obtain a waiver, the MHP must be approved by the EEA Secretary in accordance with a separate set of regulations (301 CMR 23.00), in which the criterion for approving an MHP substitution is that it must “promote, with comparable or greater effectiveness, the state tidelands policy objectives state in the corresponding provisions [of the Waterways Regulations].”

Activation of the Waterfront with Facilities of Public Accommodation

A baseline requirement of the Waterways Regulations, applicable to any nonwater-dependent use project on any tidelands, is that the project “shall devote a reasonable portion of such lands to water-dependent use, including public access in the exercise of public rights in such lands.” Mindful that the statutory definition of water-dependent use explicitly includes both general and water-based recreation, the regulations add specificity in this regard depending on whether or not a project site contains a water-dependent use zone. If so, the project generally must include at least the following:

- One or more facilities that generate water-dependent activity of a kind and to a degree that is appropriate for the project site, giving particular consideration to facilities that promote active use of the project shoreline, such as (among other things) boating/fishing facilities and boardwalks/esplanades for public recreation; and
- A pedestrian access network consisting, at a minimum, of walkways at least 10’ wide and related facilities along the entire length of the water-dependent use zone, adjacent to the project shoreline wherever feasible, together with appropriate connecting walkways that allow pedestrians to approach the shoreline walkways from public ways or other public access facilities to which any tidelands on the project site may be adjacent.

In the event the project site does not include a water-dependent use zone, the project must provide connecting walkways or other public pedestrian facilities as necessary to ensure that sites containing water-dependent use zones will not be isolated from, or poorly linked with, public ways or other access facilities to which any tidelands on the project site are adjacent.

A considerably higher level of water-related public benefit is required in the case of fill or structures for nonwater-dependent use of Commonwealth tidelands, where a project must include an array of facilities of public accommodation that “attract and maintain substantial public activity on the site on a year-round basis.” The objective here is not merely to provide physical access to the public, but for the waterfront to become a truly civic place with a high

degree of “destination value” for public use and enjoyment. To that end four primary standards must be met, as follows:

- Sites with a water-dependent use zone must contain at least one facility for water-based public activity, such as community sailing, swimming/fishing, and water transportation by excursion/charter/rental boats, ferries/water shuttles, and other passenger vessels;
- All exterior open space that is not needed for water-dependent use must be devoted either to active or passive public recreation or to public vehicular use (including surface parking, if below grade or structured parking is not a reasonable alternative)—the recreational uses must occupy at least half of the available open space and must include related pedestrian amenities, such as lighting, seating, restrooms and trash receptacles, and children’s play areas;
- Interior space in an amount equal to the combined footprint of buildings containing FPTs on Commonwealth tidelands must be devoted to FPAs, and such interior FPAs must occupy ground level spaces in such buildings unless an alternative location is more appropriate for certain specified reasons—in addition, special consideration is required for facilities that serve significant community needs, attract a broad range of people, or provide innovative amenities for public use (known as Special Public Destination Facilities); and
- The project must include a management plan for all on-site facilities offering water-related benefits to the public, to ensure the quantity and quality of such benefits will be effectively sustained—issues that may be addressed include signage, maintenance, hours and rules of operation, organizational arrangements, pricing, financing, and resolution of use conflicts.

As with certain restrictions described previously, the numerical aspect of the pedestrian access network, recreational open space, and interior FPA requirements stated above can be modified by an approved MHP if it contains substitute requirements meeting the test of “comparable or greater effectiveness.”

Management of Areas Accessible to the Public

Any site required to be accessible to the public also must be subject to long-term management that “achieves effective public use and enjoyment while minimizing conflict with other legitimate interests, including protection of private property and natural resources.” To this end, the Waterways Regulations articulate three general rules. First, no gates, fences, or other structures may be placed on any areas open to public access in a manner that would impede or discourage the free flow of pedestrian movement thereon, and all pedestrian exterior open spaces must be open to the public 24 hours a day. Second, public patronage must be encouraged by placing and maintaining adequate signage at all entryways

and other appropriate locations on the project site. Third, reasonable rules may govern public access, but no limitation on hours of availability, scope of allowed activity, or other substantial restriction may be placed without express approval in the license, which may also include conditions to protect public health, safety, or the environment.

Public Access Policy #2

Summary Statement

Improve public access to existing coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land- or water-based) to other nearby facilities. Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance, and public support facilities. Ensure that the adverse impacts of developments proposed near existing public access and recreation sites are minimized.

Policy Context

Existing recreation and access sites are extremely valuable. Demand for recreation is currently unfulfilled, the availability and cost of land precludes the acquisition of many new sites, and high quality recreation sites can stimulate and serve as an economic benefit to new development. Yet, these sites do not always operate at full capacity due to a number of limiting factors, as further discussed below.

Because some existing coastal recreation sites are underutilized and/or badly distributed, or because resistance by coastal communities to an increase in recreation on the coast is often based on undesirable auto traffic impacts, CZM believes that solving transportation access problems and providing linkages between recreation sites should be given highest priority among measures to improve coastal recreation opportunities. Additional priority should be given to increasing the use of existing sites through better management and maintenance. Many recreation sites, if managed more efficiently, could accommodate more and different uses without much change in physical impacts. CZM intends to promote more efficient recreational use when:

- Opportunities for site expansion are limited.
- The operational aspects of activities do not conflict.
- Improved management and maintenance could control operational conflicts between uses.
- Recreational activities are seasonal, thereby allowing sequencing of different uses.
- Recreational use of non-recreational areas can be accommodated on weekends.

- Improvements in water quality provide expanded opportunities for water-contact sports, there is adequate access for additional uses to benefit from such improvements, and resources are capable of supporting increased use without degradation.

Finally, development and projects near recreation sites, either onshore or offshore, can create adverse environmental impacts that can degrade the quality of the sites. Examples of such impacts are: increased traffic congestion on access roads; obstruction or limiting of public access; water pollution; and degradation of the recreation experience through change in site character, air pollution, and noise. In many cases, such negative effects can be avoided or minimized through consideration of alternatives and other mitigation measures identified through the environmental impact reporting process under MEPA.

Key Policy Elements

Important elements of this policy are described below.

CZM will support access improvements to existing recreation areas where increased use can be sustained and be consistent with other policies and when:

- Existing transportation is inadequate, especially where there are traffic problems or related environmental impacts;
- The area is state or federally owned, since potential impacts from increased use can be more easily managed on public land;
- The area is underutilized based on a ratio of parking to recreational amenities and adequate public facilities are or can be made available to support the increased use;
- Benefits from public transportation to recreation might spill over into increased town commerce and tourism; or
- Public transportation investments can service many recreation areas near each other.

CZM will consult with MassDOT, its constituent agencies, regional planning agencies, transit authorities, and other relevant transportation entities, in the transportation planning process. Through agreement with MassDOT, CZM will be given the opportunity to review projects proposed in the state's 3-5 year Transportation Improvement Plan (TIP) and its Annual Element (AE) and to propose needed improvements to recreational areas.

To maximize benefits that can result from more efficient use of existing recreation sites, CZM will: (1) seek and provide technical assistance to design areas for multiple use, and (2) ensure that funds for maintenance are made available and used effectively to work with other state, federal, and local agencies whose programs provide opportunities for multiple-use recreation (e.g., fishing, walkways on bridges over estuaries, launching ramps on roads that

abut water, and public walkways in urban renewal areas). If federal and state sources are found to be inadequate to provide necessary funds for maintenance, CZM will support efforts by DCR and local officials to develop pricing schemes for public recreation that produce revenues sufficient to cover operating expenses.

Finally, CZM implements this policy by reviewing projects subject to review under the Massachusetts Environmental Policy Act. Potential impacts to access and recreation sites can be often be mitigated by site planning and design measures, which provide setbacks and buffer zones and control water pollution, noise impacts, erosion and sedimentation, and aesthetic impacts. Other effective tools include purchase of easements or development rights or “land swaps.”

Public Access Policy #3

Summary Statement

Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities, giving highest priority to regions of high need or limited site availability. Provide technical assistance to developers of both public and private recreation facilities and sites that increase public access to the shoreline to ensure that both transportation access and the recreation facilities are compatible with social and environmental characteristics of surrounding communities.

Policy Context

Demand for the kinds of recreation experiences enjoyed on the coast is high; the facilities and sites required to provide these experiences are coastally dependent. Every region of the Massachusetts coast would benefit from additional recreational access. Often areas with limited public recreational amenities are the same as those where high costs of acquisition, development, and maintenance limit opportunities for additional recreational uses. As indicated in Public Access Policy #2, a priority for CZM is to improve transportation to and maintenance of existing facilities. Where such improvements would not be sufficient to satisfy recreation demand with areas of high need, acquisition of new land to expand existing sites will be necessary. Although not a primary source of funds for such acquisition, CZM can play a role in facilitating and coordinating the efforts of other EEA agencies with financial resources available for the purchase of shorelands and other coastal properties.

High need areas are defined in the site evaluation scheme developed by the U.S. Bureau of Outdoor Recreation for the Land and Water Conservation Fund used for recreation purchases. Generally, the evaluation favors areas with high population density, low recreation land area, and low financial ability to make purchases, while above all assessing the quality of the proposed site and project.

CZM recognizes that recreation facilities can have adverse impacts on the marine environment as well as local community character. Yet, if Massachusetts is to help the public to enjoy the benefits of a productive marine environment and visually pleasing coastal zone, both public and private means of securing general access to the shore should be encouraged. Accordingly, technical assistance to reduce negative impacts should be made available to all recreation developers, whose projects are needed to increase public access to the shoreline.

Key Policy Elements

Important elements of this policy are described below.

Within regions of high need, CZM favors expansion of existing areas when:

- Undeveloped areas abutting or near existing recreation sites are suitable for expansion.
- Existing sites are over utilized and there is no nearby substitute that might shift demand for the activity.
- Other public improvements have been made or are proposed on/near existing recreation sites; for example, where state or federal funding has been used to slow or prevent erosion of beaches.
- Access, including transit, roads, and parking, is sufficient or will be sufficient subsequent to implementation of transportation improvements under Public Access Policy #2.

Acquisition of completely new sites is a complex process in all areas of the Massachusetts coastal zone—in urban areas there is usually not adequate land or conditions suitable for new sites; in suburban areas community opposition can be high because the residential character can be severely impacted by increases in traffic, people, and ancillary services; and in rural areas the recreation development must be particularly sensitive to environmental constraints. However, after transportation, expansion, and maintenance policies have been implemented, sites must still be acquired in order to satisfy growing demand for recreation.

In recognition of such concerns, extensive consultation among affected communities and relevant state agencies will be needed prior to acquisition of any new sites to discuss and resolve the following issues:

- The need for the acquisition.
- Potential traffic and environmental impacts.
- Potential social and economic impacts on the surrounding community(ies).

- Possible alternatives, including expansion of other existing sites, acquisition of smaller dispersed sites in conjunction with trails, or acquisition of large sites in other locations.

Funding of site expansions will generally be considered a higher priority than new acquisitions. Expansions are a higher priority because the detrimental impacts associated with the expansion will generally be less than disturbing previously untouched areas.

One mechanism for expanding recreational opportunities is the purchase of trail easements. CZM will also solicit aid from the Massachusetts Department of Transportation to make improvements where such trails are alongside roads, over ridges, etc., and from DCR, the Public Access Board, or communities who will manage or share the benefits of the proposed trails. Trails should be developed in conjunction with either designated or potentially designated easements, such as scenic roads or rivers and seapaths for strolling on tidal flats, which should be concomitantly implemented. The uses of such trails should be compatible with the intent of the designation.

Another means of developing new recreation sites is the disposal of surplus federal properties that could be utilized for recreational purposes. However, prior to acquisition, site-specific analyses of environmental, economic, and social constraints should be conducted to determine the appropriate form of recreational use and development that should occur.

CZM's policies exempt certain types and amounts of recreation facilities from development restrictions placed on salt marshes, dune areas, sandy beaches, and barrier beaches. For example, the construction of boat ramps is permitted in some of these significant resource areas, provided associated parking facilities are built at higher elevations in less sensitive areas away from the waterfront. Marinas are also permitted, provided their wharves or piers are built on pilings, allowing the free flow of the tide and the maintenance of existing tidal circulation.

Sophisticated planning and design by public and private developers will be required to ensure construction will minimize adverse environmental impacts. To facilitate this process, CZM from time to time will prepare guidance documents to assist such developers in designing, constructing, and operating marinas, beaches, boat ramps, and other recreational facilities consistent with CZM's Coastal Hazards, Habitat, Protected Areas, and other relevant policies. CZM will also offer technical assistance to municipalities to identify appropriate boating facility sites, develop harbor master plans, or provide other incentives to encourage private boating facility development. Technical assistance documents published by CZM relating to this policy include: *Guidelines for Barrier Beach Management in Massachusetts*; *Massachusetts Clean Marina Guide: Strategies to Reduce Environmental Impacts*; and *ACEC Stewardship Guide*.

Water Quality

It is the intent of the Massachusetts coastal management program to support attainment of state and national water quality goals for all waters of the coastal zone. To implement that intent, CZM has developed the following three water quality policies for point source, nonpoint source, and groundwater discharges.

Water Quality Policy #1 [enforceable]

Summary Statement

Ensure that point-source discharges and withdrawals in or affecting the coastal zone do not compromise water quality standards and protect designated uses and other interests.

Policy Context

The uncontrolled discharge of pollutants into water bodies may have significant adverse effects on their physical, biological, and chemical integrity and functions in the environment. Wastewater treatment, industrial processes, and combined sewer overflows are all point source discharges that—both individually and cumulatively—can adversely affect water quality and the designated uses of water bodies. The frameworks formed by state and federal statutes and regulations establish limitations on such discharges and minimum water pollution control requirements to achieve water quality goals.

Water quality standards are established to ensure the maintenance and protection of designated uses of water bodies. Designated uses are a reflection of the “fishable/swimmable” goal of the federal Clean Water Act and include the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water for all waters. Designated uses are human uses and ecological conditions that are officially recognized and protected. Designated uses include both human uses, such as drinking water supply, primary contact recreation, fish consumption, and shellfish harvesting, and aquatic life uses—the “use” of water for a healthy, balanced population of native aquatic life.

While designated uses and water quality criteria provide minimum goals for water bodies, anti-degradation provisions have been established to ensure the protection and maintenance of existing uses of waters, maintain high quality waters, and protect ecologically significant and outstanding recreational resource waters.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in

accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Discharge Permits and Standards

All discharges to surface waters in Massachusetts are governed by permits that are issued jointly by USEPA and MassDEP in accordance with guidelines set forth as part of the National Pollutant Discharge Elimination System. This system establishes levels of effluent quality that must be achieved at all facilities to ensure that water quality standards are met in the receiving waters. In Massachusetts, the majority of point-source activities covered by NPDES permits includes: municipal and industrial wastewater treatment, stormwater discharged from municipal separate storm-sewer systems, oil terminal collection systems, aquaculture, effluent from academic and research institutions, and cooling water. Massachusetts has not been delegated the authority to issue NPDES permits, thus the USEPA drafts the permits and submits them to MassDEP for review and state certification. This process results in a final discharge permit that is valid under both federal and state law, and as such, each permitting agency has the independent right to enforce its terms and conditions. CZM reviews all draft NPDES permits for discharges to coastal waters to ensure consistency with CZM policies.

Under Section 401 of the federal Clean Water Act (33 U.S.C. 1251 et seq.), the state must certify that proposed discharges to waters of the United States within the Commonwealth comply with Massachusetts Surface Water Quality Standards and other appropriate requirements of state law. Among other things, state standards at 314 CMR 4.00 et seq. establish requirements, standards, and procedures for the control of activities involving discharges and for the evaluation of alternatives for these activities. Under 401, conditions may be established for discharges and related activities—such as water withdrawals or hydrologic alterations—to ensure compliance with narrative and numerical criteria, protection of existing and designated uses, and maintenance or restoration of hydrologic conditions and flows to protect existing and designated uses. CZM works with MassDEP to ensure that 401 Water Quality Certifications are consistent with its coastal program policies.

Entrainment and Impingement

One area of particular concern in Massachusetts is the avoidance or minimization of impacts from activities that withdraw water from the coastal zone, either for once-through cooling (e.g., power plants) or for process water (e.g., desalination plants), including—but not limited to—the entrainment and impingement of marine organisms and the quality of such withdrawn water when discharged back to the coastal zone. Issuance or reissuance of a NPDES permit for a power plant is contingent upon the demonstration that the permitted activity is in compliance with federal regulations associated with thermal discharges and cooling water intake structures (CWA Section 316(a) and (b)), as well as state water quality

standards. CWA Section 316(a) applies if the permit applicant seeks a variance from technology-based or water quality-based effluent limitations for the discharge of heat. To obtain the variance, the applicant must demonstrate that the effluent limitations proposed will ensure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the receiving waters. CWA Section 316(b) applies if the permit applicant seeks to withdraw cooling water from waters of the United States. Under Section 316(b), the applicant must demonstrate that the location, design, construction, and capacity of the facility's cooling water intake structures reflect the Best Technology Available for minimizing adverse environmental impacts. In addition to the federal statutes that apply to power plants, the state water quality standards include limitations on the maximum temperature and change in temperature that can be discharged by power plants (as well as other facilities). The state water quality standards allow for the establishment of conditions for power plant cooling water intakes and desalination plant intakes to ensure that the narrative and numerical criteria, and designated uses of the water body, are protected.

- *Total Maximum Daily Loads*

Another area of concern under this policy is for water bodies that are not meeting their designated uses under technology-based controls. For such areas, standards are established to define the maximum allowable loading of pollutants that a water body can receive and still meet the water quality standards established for protecting public health and maintaining the designated beneficial uses of those waters. These total maximum daily loads (TMDL) have been developed for a large number of water bodies in coastal watersheds, including the Blackstone, Boston Harbor, Buzzards Bay, Cape Cod, Islands, Narragansett Bay, and South Coastal. MassDEP continues to work on TMDL development for a prioritized list of water bodies. Implementation of TMDLs is advanced through authorities contained in the Massachusetts Clean Waters Act and implementing rules, including the Massachusetts Water Quality Standards.

Ocean Sanctuaries

Attainment of marine water quality goals is furthered under M.G.L. c. 132A, §§12A-16F, 18, the Ocean Sanctuaries Act. This statute requires that in the Cape Cod Ocean Sanctuary, the Cape Cod Bay Ocean Sanctuary, and the Cape and Islands Ocean Sanctuary, no municipal wastewater treatment discharge into the ocean sanctuary shall be allowed. In the South Essex Ocean Sanctuary, municipal discharges are allowed only if they are: (1) the only feasible alternative to existing water pollution problems; (2) consistent with the intention and purpose of OSA; and (3) approved and licensed by appropriate federal and state agencies. In the North Shore Ocean Sanctuary, a municipal discharge shall be allowed only if: (1) all the requirements for the South Essex Ocean Sanctuary are met; (2) construction is commenced prior to January 1, 1978, or the municipality has been awarded a federal or state grant for construction of the facility prior to January 1, 1978; (3) the waste has been treated by the

best practical means; and (4) the discharge is in accordance with plans developed under provisions of clause (10) of §27 of M.G.L. c.21 and subject to the approval of the MassDEP Division of Water Pollution Control after a public hearing is conducted by said Division. The OSA does contain a provision that allows for discharge of municipal waste if a variance is issued by MassDEP and a suitable quality of effluent is achieved to protect the appearance, ecology, and marine resources of the sanctuary.

Water Quality Policy #2 [enforceable]

Summary Statement

Ensure the implementation of nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.

Policy Context

Implementation of the Clean Water Act has demonstrated that controls for point source discharges of pollutants have a beneficial effect on the nation's water bodies. However, nonpoint source (NPS) pollution is much more difficult to quantify and to address. Nationally, nonpoint pollution sources are ranked as the most significant contributor to the violation of surface water quality standards. In Massachusetts, monitoring assessments and professional estimates demonstrate that NPS pollution is the dominant cause of designated use non-attainment for rivers, lakes, and coastal waters.

CZM administers the state's Coastal Nonpoint Pollution Control Program (CNPCP), which addresses six primary causes of NPS pollution: urban sources, marinas and recreational boating, agriculture, forestry, hydromodification, and wetlands protection and restoration. Massachusetts received federal approval of its CNPCP in 1997. Implementation of the CNPCP is achieved through the implementation of enforceable control—or management measures—through a number of programs and authorities as described in the CNPCP.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities, many of which form the basis for the implementation of management measures of the federally approved CNPCP (whose major components are summarized below). Other program areas that are relevant to the implementation of this NPS policy include the two National Estuary Programs' Comprehensive Conservation and Management Plans and oil spill prevention and response activities, which are also discussed below.

Urban Areas

NPS pollution generated in urban areas includes contaminants from stormwater runoff, inadequate or failing septic systems, construction projects, household sources, and roads and highways. Urban NPS pollution is the most significant source of pollutants to Massachusetts coastal waters.

- **Stormwater** - In 1996, Massachusetts issued a statewide Stormwater Management Policy with nine management standards and associated policy and technical guidance. This Stormwater Management Policy was developed with the guidance and input of a diverse Stormwater Advisory Committee. The policy is implemented through the legal authorities of state's Wetland Protection Act. MassDEP's *Massachusetts Stormwater Handbook* was revised in 2008 to reflect regulatory changes to the Wetland Protection Act regulations promoting increased stormwater recharge, the treatment of more runoff from polluting land uses, low impact development (LID) techniques, pollution prevention, the removal of illicit discharges to stormwater management systems, and improved operation and maintenance of stormwater best management practices.
- **Septic Systems** - Septic systems are major sources of pathogens and nutrients, causing significant pollution in many areas of the coast. MassDEP, in cooperation with other state agencies including CZM, revised Title 5 of the State Sanitary Code in 1995. These regulations govern the installation and maintenance of septic systems throughout the Commonwealth. CZM worked with MassDEP to ensure that the Coastal Nonpoint Pollution Control Program requirements have been met by the revised Title 5.
- **Construction** - New construction contributes sediment loads, as well as chemical and nutrient contaminants. Several different state program and authorities contain requirements to implement measures for erosion and sediment controls. CZM worked with the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) and the Massachusetts Executive Office of Public Safety to develop guidance on how to implement effective control measures: *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas: A Guide for Planners, Designers, and Municipal Officials* (1997).
- **Highways** - Highways contribute sediments, salt, heavy metals, and petroleum hydrocarbons to stormwater. Wetlands and shellfish growing areas continue to be impacted in many coastal areas from runoff and stormwater coming off roads or routed through roadway drainage. CZM worked with the Massachusetts Highway Department (MassHighways), which is now the MassDOT Highway Division, to finalize stormwater, drainage, and NPS control specifications for all state road and highway work. Municipal road projects also must meet the state stormwater standards and CZM provides technical assistance to local highway departments so

that they can better implement control measures, plan for future projects, and adopt local specifications. MassDEP and MassHighways jointly produced a document providing guidance to roadway designers, public works personnel, and others involved in the design, permitting, and review of highway and bridge projects in Massachusetts to comply with the state stormwater performance standards: *The MassHighways Storm Water Handbook for Highways and Bridges* (2004).

Marinas and Recreational Boating

Marinas and boating activities have the potential to contribute pathogens, heavy metals, sediments, and petroleum hydrocarbons to coastal waters, as well as cause habitat impacts. Marinas and boats generate NPS pollution when they are improperly sited, designed, or operated. The MassDEP Waterways Regulation Program and Wetlands Protection Program, which govern activities within Massachusetts waterways, address a number of causes of NPS pollution from boats and marinas. To help reduce the sources of NPS pollution, CZM has developed guidance documents that help marinas and harbormasters to implement state requirements and control NPS pollution. CZM provides marinas and harbormasters with the technical assistance they need to meet NPS requirements. CZM's *Massachusetts Clean Marina Guide* (2001) provides information on strategies, controls, and practices to reduce marina and boating impacts. One of the most challenging issues faced by Massachusetts boatyards, yacht clubs, and marinas today is the proper handling and disposal of pressure washwater. In 2008, CZM released *A Guide to Selecting Pressure Washing Management Practices and Technologies* as a supplement to the *Massachusetts Clean Marina Guide* to guide marina operators in the proper identification of suitable pressure washing management practices for their facility(ies).

While Massachusetts state law prohibits the discharge of untreated sewage from boats into waters of the Commonwealth, the state has also designated boat sewage No Discharge Areas—areas where the discharge of all boat sewage, whether treated or not, is prohibited. Under §312(f)(3) of the federal Clean Water Act, Massachusetts has received USEPA approval for the designation of much of its coastal waters as No Discharge Areas.

Agriculture

Agricultural activities are potential sources of sediments, nutrients, pathogens, and pesticides. While agricultural runoff in Massachusetts is typically localized, it still has the potential to cause nonpoint pollution problems. CZM, DAR, and MassDEP have developed an NPS pollution control strategy that focuses on technical assistance, pro-active planning, and the use of best management practices—with the goal of addressing NPS pollution problems without causing economic hardship for Massachusetts farmers. In addition, to develop the best strategies for reducing NPS pollution from agricultural sources, CZM worked with DAR, NRCS, and the University of Massachusetts Cooperative Extension Service to develop a technical manual, the *Massachusetts Environmental Farm Plan Workbook*.

Hydromodification

Among others, legal authorities contained in the implementing regulations of the Wetlands Protection Act, Chapter 91 Public Waterfront Act, and the state's Clean Water Act contribute significantly to preventing and controlling NPS pollution impacts from channelization (dredging, flood control, and drainage improvements) and dam building. CZM will continue to work with MassDEP, as well as with other agencies, to implement strategies that address the NPS pollution impacts from hydromodification.

National Estuary Programs

The two National Estuary Programs in Massachusetts, the Buzzards Bay National Estuary Program and the Massachusetts Bays Program, have both developed Comprehensive Conservation and Management Plans that contain extensive recommendations for nonpoint pollution controls and identify action steps for implementation efforts, many of which are underway.

Oil Spill Prevention and Response

Chapter 251 of the Acts of 2004, *An Act Relative to Oil Spill Prevention and Response in Buzzards Bay and Other Harbors and Bays of the Commonwealth*, raised fines for oil spills, implemented new safety standards, changed navigational rules including tug escort pilotage requirements and Massachusetts pilots licenses for Buzzards Bay, and also imposed a fee to establish a fund for state and local oil spill response and training.

CZM participates in the development of U.S. Coast Guard (USCG) Area Committee Response Plans by assisting in the determination of natural resources that will be the focus of the Response Plan. CZM provides assistance, as needed, to the EEA Secretary to approve a USCG decision as to whether spilled oil can be safely burned in situ, or if surface washing is the preferred method to minimize environmental damages.

Water Quality Policy #3 [enforceable]

Summary Statement

Ensure that subsurface waste discharges conform to applicable standards, including the siting, construction, and maintenance requirements for on-site wastewater disposal systems, water quality standards, established Total Maximum Daily Load limits, and prohibitions on facilities in high-hazard areas.

Policy Context

In the past, groundwater was generally considered to be a pristine resource. Both experts and

the public believed that subsurface waters were naturally protected by layers of soil and earth, and were self-cleansing. Contamination, where it occurred, was thought to be primarily localized and the result of septic system operations. However, in the late 1970s, that way of thinking was drastically altered by the widespread discovery of pesticide and chemical contamination in groundwater and increased reports of the need to close drinking water wells.

At the same time that these threats to groundwater began to be more clearly recognized, the importance of protecting groundwater also became more evident, not only as a source of drinking water but for its beneficial uses and ecological roles. According to USEPA's *National Water Quality Inventory-1998 Report to Congress*, 77,500 million gallons of the nation's groundwater are withdrawn daily for uses including drinking and bathing, irrigation of croplands, livestock watering, and industrial uses—a rate of withdrawal that places a severe strain on the nation's groundwater resources. In the Commonwealth of Massachusetts, over 30% of homes have on-site wastewater systems, as do small businesses and institutions that are located in unsewered areas.⁸ Onsite wastewater disposal ranks among the top four sources of river pollution; has contributed to shellfish bed closures; and has degraded water supplies, lakes, and ponds.

Key Policy Elements

Important elements of this policy are described below. This policy is implemented in accordance with the state statutes and regulations included in Appendix 3 - Coastal Program Legal Authorities.

Standards for Subsurface Sanitary Systems

Regulations for the design and construction of conventional septic systems and for the use of alternative technologies are contained in Title 5 of the State Environmental Code (and at 310 CMR 15.00 et seq.). Alternative systems are those systems that provide substitutes or alternatives for one or more of the components of a conventional system while providing an equal or better degree of environmental and public health protection.

In Massachusetts, there are upland areas with impermeable or wet soils, steep slopes, or bedrock near the surface. Unless public sewers are provided to overcome the constraints these factors impose on the use of subsurface disposal systems, development will be constrained by standards that establish minimum requirements for such systems. In the absence of sewers, standards generally restrict permissible uses in these areas to moderate- to low-density residential, open space, recreation, or other uses not requiring subsurface

⁸www.mass.gov/dep/about/organization/aboutbrp.htm#aboutt5.

disposal. Permissibility is determined on a case-by-case basis because of the variability of soil and geologic conditions from site to site. If areas are sewerred, they can be developed consistent with the policies for the remainder of the coastal zone.

- *Total Maximum Daily Loads*

Another area of concern under this policy is for waterbodies that are not meeting their designated uses under technology-based controls. For such areas, standards are established to define the maximum allowable loading of pollutants that a waterbody can receive and still meet the water quality standards established for protecting public health and maintaining the designated beneficial uses of those waters. These total maximum daily loads have been developed for a large number of water bodies in coastal watersheds, including the Blackstone, Boston Harbor, Buzzards Bay, Cape Cod, Islands, Narragansett Bay, and South Coastal. MassDEP continues to work on TMDL development for a prioritized list of water bodies. Implementation of TMDLs is advanced through authorities contained in the Massachusetts Clean Waters Act and implementing rules, including the Massachusetts Water Quality Standards.

Development on Barrier Beaches

As covered in the Coastal Hazards policies, Executive Order 181 was established in 1980 and contains a suite of policies to protect barrier beach areas, including a requirement that no development shall be permitted in the velocity zones or primary dune areas of barrier beaches, and that state funds and federal grants for construction projects shall not be used to encourage growth and development in hazard-prone barrier beach areas. Standards supporting this Executive Order are found in such other enforceable authorities as the Wetlands Protection Act regulations.