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Small Docks and Piers



A Guide to Permitting Small, Pile-Supported Docks and Piers

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Printable copies of this document can be downloaded at the following DEP Web site: http://www.state.ma.us/dep/brp/waterway/waterway.htm

This information is also available in alternate formats upon request by contacting the ADA Coordinator at 617/574-6872.

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Introduction

This guidance document was specifically designed for anyone interested in designing or building a small pile-supported dock or pier or other small water-related structure that will be an accessory to a place of residence. It is also a helpful document for local government officials, such as Conservation Commissions, who are responsible for the permitting of such structures. Small dock and pier projects where dredging is proposed are not covered in this particular guidance.

The work standards in this guidance are consistent with two Massachusetts state laws governing small dock and pier construction: the Wetlands Protection Act and the Public Waterfront Act, also known as the Chapter 91 Waterways Law. If you plan to construct a small dock or pier, you must obtain a wetlands permit or "Order of Conditions" from the municipal conservation commission and a state waterways "license" from the Massachusetts Department of Environmental Protection (DEP) prior to starting work.

If you want to obtain authorization for an existing dock or pier that doesn't require additional construction, you may file a "Request for Determination of Applicability" under the Wetlands Protection Act along with a simplified license or regular license application under Chapter 91. See DEP's Web site to download any of theses application forms: http://www.state.ma.us/dep/brp/ww/wwforms.htm.

Section I.
Overview of the Wetlands and Waterways Permitting Requirements

Chapter 91 is one of the oldest laws in the nation. Dating back to the Colonial Ordinances of 1641-1647, it is based on the principle that states that the air, the sea, and the shore belong to no one person, but to the public at large.

In Massachusetts, the construction of small docks, piers, and related structures requires permits or authorization under two laws, the Public Waterfront Act and the Massachusetts Wetlands Protection Act. These laws were designed to protect the public's ownership rights and access to the water, and along its shore and to ensure the environmental and public health benefits that wetlands provide.

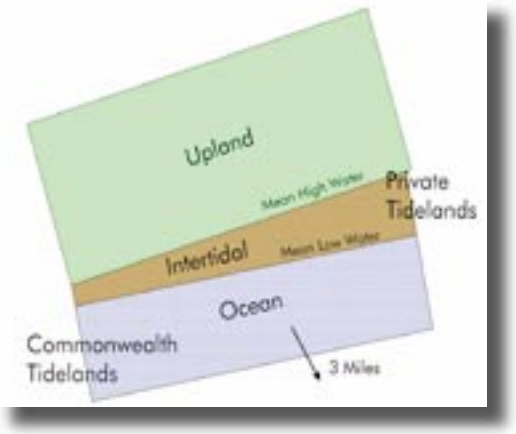
Massachusetts Waterways Licensing

In accordance with the Public Waterfront Act (also known as Massachusetts General Law Chapter 91), which dates back to colonial times, the state owns the coastal waters and the land under the water below the historic low water mark. As the owner of these "Commonwealth Tidelands," the state is responsible for ensuring that the public's rights to use and have access to these valuable areas are protected.

In contrast, the public has a more limited right to "fish, fowl, and navigate" on "private tidelands" – the area between the historic high and low water marks. Finally, some public rights still apply to filled tidelands, areas along the coast that were originally public or private tidelands but were filled many decades ago. This is particularly relevant in urban areas, like Boston, where the coastline is almost entirely "fill." In such areas, public access and other rights are protected by the state all along the waterfront.

Great Ponds and lakes are bodies of water that contain more 10 acres or more in their natural state. Ponds and lakes presently larger than 10 acres are presumed to be Great Ponds, unless evidence is provided that proves otherwise. Ponds that were 10 acres or more originally, but have become smaller for any reason, are still considered to be Great Ponds.

In addition, the state also historically owns the land and water within inland "Great Ponds" (lakes and pond originally 10 acres or more in size). A list of Great Ponds can be found on DEP's web site: http://www.state.ma.us/dep/brp/waterway/research.htm#ponds. Under a 1939 amendment to the Chapter 91 law, the public right of navigation is also protected in non-coastal waterways.



Chapter 91 Waterways Jurisdictional Areas

The Massachusetts Department of Environmental Protection (DEP) is the state agency responsible for administering the Public Waterfront Act. DEP accomplishes this by reviewing and issuing licenses for structures in and along tidelands, Great Ponds, and navigable rivers and streams as specified in its Waterways Regulations (310 CMR 9.00). Private structures, such as small docks and piers, are only permitted in these areas if the public's ownership and/or access rights are protected in DEP's waterways license. These structures must meet the standards described in this Guidance to ensure:

- Public Navigational Rights
- Public Access Rights in and along the Shore
- Public Safety

Some small dock and pier projects are eligible for a "Simplified Waterways License" (*formerly Application BRP WW 06*), which is less expensive and easier to obtain than regular licenses, and can generally be completed by an applicant without the aid of an engineer or other consultant. To qualify for a Simplified license, the project must:

- Consist of a dock, pier and/or other small scale structure that is an accessory to a residential use or serves as a noncommercial docking facility.
- Be pile supported (e.g., wooden or metal posts) or bottom anchored (No fill allowed within a waterway!);
- Be no more than 600 square feet below the high water mark;
- Not be a marina (that is, serving 10 or more vessels);
- Be "water dependent" (that is, it needs to be in the water or along the shore);
- Be consistent with an accepted resource management plan if it is within a designated Area of Critical Environmental Concern (ACEC web site http://www.state.ma.us/dem/programs/acec/acec1.htm); and
- Meet the various waterways design and construction standards outlined in this Guidance.

Small structures that do not meet the above criteria must submit a regular waterways application (BRP WW 01) to DEP. Those applications tend to be more costly and require the assistance of a licensed professional engineer.

For more information on procedures for obtaining a Waterways license from DEP, see instructions for filing Waterways Applications, or contact your regional DEP office for a hard copy of these instructions. See the DEP Waterways web site for more information: http://www.state.ma.us/dep/brp/waterway/waterway.htm.

Massachusetts Wetlands Protection Act Permitting

Unlike the Waterways law, which protects the public rights of navigation and access to state waterways, the Massachusetts Wetlands Protection Act is designed to protect the public benefits that the state's valuable wetland resources provide (a few examples include the protection of drinking water supplies, fisheries, and flood control), whether located on public or on private property. Under Massachusetts' law and regulations (MGL Chapter 131, § 40 and 310 CMR 10.00), wetland "resource areas" include (*See page 13 for illustrations of wetland resource areas*):

- Inland swamps, marshes, bogs and wet meadows ("Bordering Vegetated Wetlands" or BVW) and coastal salt marshes
- Land under water bodies
- Banks of water bodies
- Floodplains
- Coastal Beaches and Dune fields
- Riverfront areas (within 200 feet of most perennial rivers and streams)
- Fish Runs
- Land Containing Shellfish

DEP's Wetlands Regulations, 310 CMR 10.00 set minimum resource protection standards that Conservation Commissions must follow.

The Wetlands Protection Act standards for small docks and piers protect against potential negative impacts to wetlands that may detrimentally affect:

- Water quality (from leaching, spillage, runoff and turbidity);
- Water circulation and sediments (scouring, erosion, sedimentation);
- Important vegetation and shellfish beds (disruption of growing areas and spawning habitat);
- Rare animal species that depend on wetland habitat.

To find out more about conservation commissions and what they do, visit the Massachusetts Association of Conservation Commissions Web site, http://www.maccweb.org/home.html.

An application for permission to build in wetland resource areas called a "Notice of Intent" (NOI) must be filed with the municipal Conservation Commission and with DEP. Conservation commissions are a volunteer board appointed by the executive authority in each community to administer the state wetlands law on the local level. These commissions can usually be reached by contacting the town/city hall.

Construction of a small dock or pier in a wetland resource area constitutes a wetland alteration, and requires an NOI. In turn, Conservation Commissions should NOT use "Determinations of Applicability", rather than an NOI, to review any proposed dock or pier project, though it may be appropriate for authorizing existing structures not requiring structural maintenance.

DEP's Wetlands regulations (310 CMR 10.00) set minimal resource protection standards that the Conservation Commission must follow (although some municipalities also have local wetland bylaws that are even stricter than state standards). NOI application forms can be obtained from DEP (http://www.state.ma.us/dep/brp/ww/wwforms.htm) or from the local Conservation Commission.

The Conservation Commission will review the NOI application at a public hearing (generally held in the evening). If the project complies with the state wetlands regulations and local wetland bylaws, the Commission will issue a permit called an "Order of Conditions". As the name implies, the project must comply with a list of conditions contained in the Order. Section III in this guide provides greater detail on what these standard conditions are and how an applicant can design projects to meet them.

If the applicant (or an abutter, aggrieved person, the property owner, ten citizens, or DEP) objects to the Order, an appeal for a "Superseding Order of Conditions" can be made to DEP (except for those Conditions which are based strictly upon a local wetlands bylaw). In turn, a Superseding Order may be appealed to DEP's Office of Adjudicatory Appeals. No work can begin on a project until the wetlands Order is final.

For more information on procedures for obtaining a Wetlands Order of Conditions, see instructions for filing a Notice of Intent at http://www.state.ma.us/dep/brp/ww/wwforms.htm, or contact your regional DEP office for a hard copy of these instructions.



Section II.
Summary of Standards Applying to Small Docks and Piers Built in Various Locations

Standards applying to small docks and piers vary in a number of ways depending on their location. Most importantly, the standards are quite different if the structure is proposed in an inland or in a coastal or tidal area. Under the state Waterways law, different standards apply according to whether all or part of a project occurs in one or more of the following locations:

- Flowed Tidelands (below mean high water)
- Filled Tidelands (up to historic mean high water)
- Great Ponds (up to mean high water)
- Non-tidal Rivers and Streams (up to mean high water)

Under the state Wetlands Protection Act, the Waterways locations listed above (except, generally, filled tidelands) are also subject to performance standards pertaining to one or more overlapping wetland locations referred to as "wetland resource areas." For example, a small dock or pier project may also have an elevated walkway crossing a number of wetland resource areas (like Bordering Vegetated Wetland, dune fields, etc.) lying outside the jurisdiction of the Waterways law (that is, landward of the high water mark and not within filled tidelands). In such a case, the pier, which extends over the water, would be subject to Wetlands and Waterways standards, while the elevated walkway would be subject to Wetland standards only.

Projects in Coastal Wetland Resource Areas

Projects within the following Wetland Resource Areas also, in general, lie totally or partly within the Waterways location of "Flowed Tidelands". Therefore, these projects also require both Wetlands and Waterways permits/licenses:

- Land Under the Ocean
- Coastal Beaches
- Rocky Intertidal Shores
- Salt Marsh
- Land Under Salt Ponds
- Land Containing Shellfish*
- Banks or Land Under the Ocean Underlying a "Fish Run" **

Mean high water and mean low water refers to the average high and low tide levels for a 19 year period.

** "Land Containing Shellfish" is limited to areas identified and mapped by the conservation commission or DEP based either on maps and designations of the MA Division of Marine Fisheries, or on maps and written documentation of the local shellfish constable or DEP. Such mapped areas occur only within the wetland resource areas "Land Under the Ocean", "Rocky Intertidal Shores", "Salt Marsh" and "Salt Ponds" and tidal flats found on "Coastal Beaches" (including Barrier Beaches.)*

*** "Fish Runs", where they occur, overlap with the wetland resource areas "Banks" (coastal and, sometimes, inland) and Land Under Ocean (and sometimes inland Land Under Waterbodies and Waterways).*

Projects in the following coastal Wetland

Resource Areas are generally outside Waterways jurisdiction and are subject only to Wetlands standards:

- Coastal Bank
- Coastal Dune
- Land Subject to Coastal Storm Flowage

Residential docks and piers are prohibited in one coastal wetland resource area in order to preserve these areas strictly for commercial and industrial use:

- Designated Port Areas.



Projects In Inland Wetland Resources Areas

Projects within the following inland Wetland Resource Areas may lie totally or partly within a Great Pond or a navigable, non-tidal river or stream, and thus may need to obtain both Wetlands and Waterways permits:

- Land Under Water
- Bank



Portions of a project in the following inland Wetland Resource Areas are generally outside Chapter 91 Waterways jurisdiction and are subject only to Wetlands standards:

- Bordering Vegetated Wetlands
- Land Subject to Flooding
- Riverfront Area*

** Riverfront Areas generally lie within 200 feet (25 ft for densely developed areas) of the mean annual high water mark of perennial inland and coastal rivers and streams. The Riverfront Area provisions do not apply to any specific portion of a project that requires a waterways license (see 310 CMR 10.58(6)(i)).*



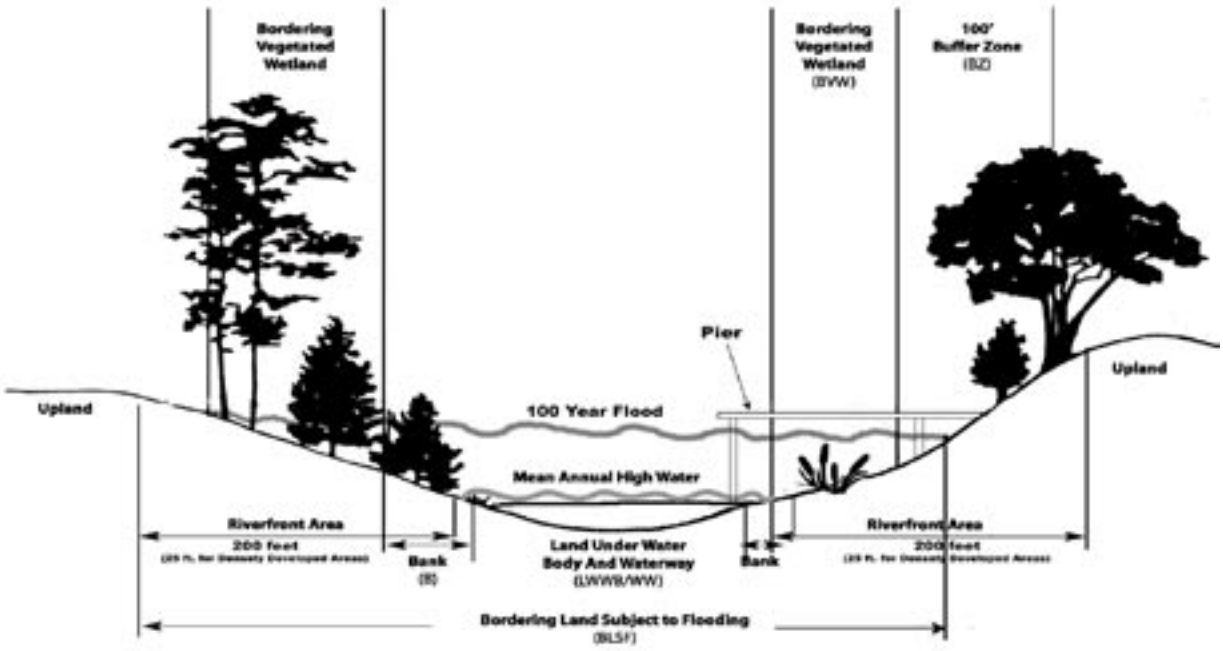
Matrix of Coastal and Inland Small Docks/Piers Projects and Required Standards

To use the charts on these two pages, determine whether any portion of the project is found in each of the locations listed on the left side of the chart. Then look to see which standards apply to that location. Each standard is discussed in detail on the pages indicated at the top of the chart.

Inland Project Location	C.91 &/or WPA Standards	Navigation P. 14	Access P.19	Safety P. 14	Minimize Environ. Impacts P. 20	Rare Species P.15	Alternatives Analysis P. 19	Water Flow * P.15	Light for Vegetation* P.15
Great Pond/Land Under Water	•	•	•	•	•	•	•	•	
Navigable Waterway/ Land Under Water	•		•	•	•	•	•	•	
Bank				•	•	•			
Bordering Vegetated Wetland				•	•	•	•	•	
Riverfront Area (Incl. Tidal Rivers)				•	•	•			
Land Subject to Flooding				•	•	•	•		

* No small private piers are allowed on Land Under Ocean located in Designated Port Areas

Inland Wetland Resource Areas and Associated Buffer Zones Applicable to Small Docks and Piers



Matrix of Coastal and Inland Small Docks/Piers Projects and Required Standards

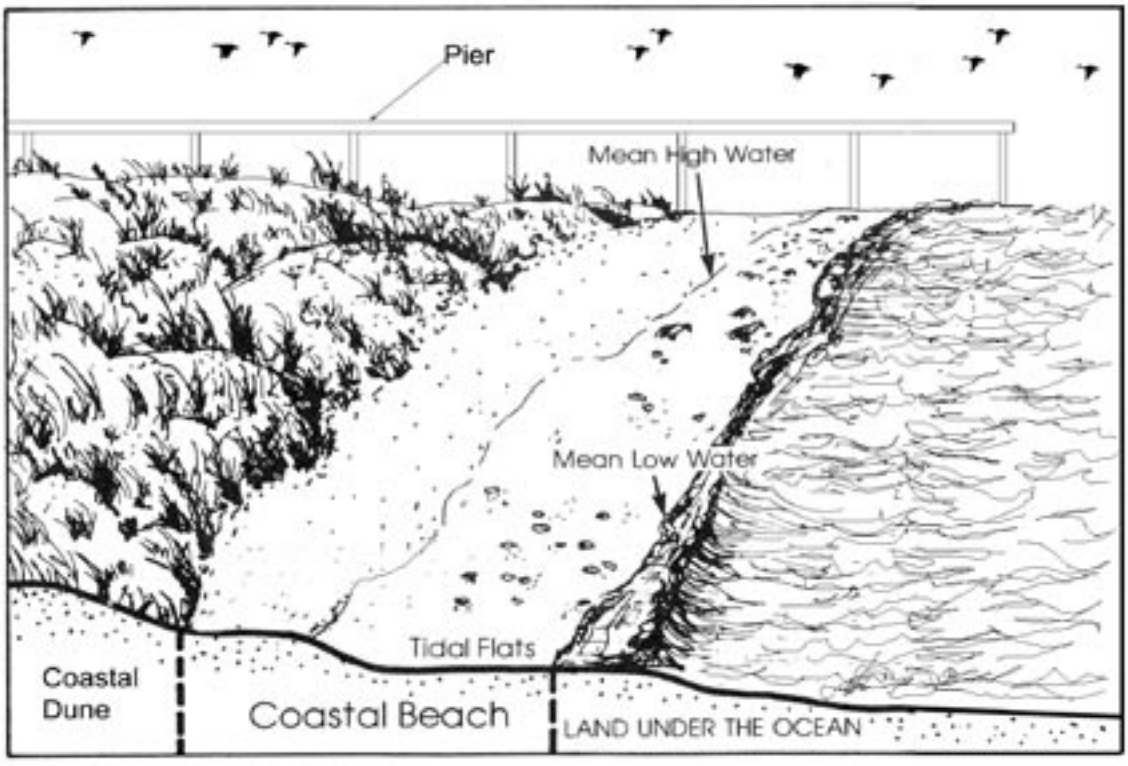
To use the charts on these two pages, determine whether any portion of the project is found in each of the locations listed on the left side of the chart. Then look to see which standards apply to that location. Each standard is discussed in detail on the pages indicated at the top of the chart.

Coastal Project Location	C.91 &/or WPA Standards	Navigation P. 14	Access P. 19	Safety P. 14	Water Circulation P. 15	Rare Species P. 15	Water Quality P. 17	Salt Marsh/Pond Veg. & Eel Grass P. 15	Land Containing Shellfish P. 18	Bank, Beach &Dune Stability P. 18	Fish Runs P. 19
Flowed Tidelands	•	•	•	•	•	•	•	H		F
Filled Tidelands		•	•							
Land Under Ocean*	•	•	•	•	•	•	•	H		F
Coastal Beach/Tidal Flats (Incl.Barrier Beach)	•	•	•	•	•	•		H	•	
Rocky Intertidal Shores	•	•	•	•	•	•		H		
Coastal Dunes (Incl. Barrier Beach					•				•	
Coastal Bank					•				•	F
Salt Marsh		•	•	•	•		•	H		
Land Under Salt Ponds	•	•	•	•	•	•	•	H		
Land Subj.to Coastal Storm Flowage					•				•	

H If the project location is Land Containing Shellfish, See page 18

F If the project location is in a fish run, See page 19

* No small private piers are allowed on Land Under Ocean located in Designated Port Areas



Section III.
Design and Construction Standards for Small Docks, Piers and Related Structures

A. Waterways Design Standards

Protection of Navigation in all Waterways.

Docks, piers, and related structures of any size may not:

- Exceed the minimum size necessary to achieve the intended water-related purposes;
- Extend beyond the length required to achieve a safe berthing;
- Intrude into, or approach, navigation channels or extend seaward of any state harbor lines;
- Extend more than 25% of the distance across a waterbody;
- Impair the line of sights necessary for navigation;
- Interfere with access to adjoining areas by extending "substantially beyond the projection of existing structures adjacent to the site";
- Interfere with access or public rights associated with a public landing, easement, other public access to the water;
- Generate water-borne traffic that would substantially interfere with other vessels;
- Impair in any other substantial manner the ability of the public to swim or float freely upon the waterways;
- Be set back less than 25 feet from property lines where feasible; or
- Be allowed in state-designated "Areas of Critical Environmental Concern" unless there is a resource management plan approved by the Massachusetts Executive Office of Environmental Affairs (see http://www.state.ma.us/dem/programs/acec/acec1.htm)

Protection of Lateral Access Along the Shoreline

On Flowed Tidelands:

- All structures must be designed to allow foot traffic under, over, or around the structure. (Steps on either side of a dock often increase environmental impacts so passage under dock with a five foot clearance at the high water mark is preferred – elevated docks have the added benefit of allowing more light to reach under the dock.)
- If obstruction is unavoidable, alternate lateral passage above the high water mark around the pier must be provided.
- The right of public access under or around the pier should be posted on the pier.

On Filled Tidelands and Great Ponds:

- Reasonable measures shall be provided for on-foot passage, including allowing the public to pass laterally along a portion of the project shoreline or transversely across the site to a point on the project shoreline.

Areas of Critical Environmental Concern are places in Massachusetts that receive special recognition because of the quality, uniqueness, and significance of their natural and cultural resources.

Engineering and Construction Standards to Protect Navigation, Public Health and Safety, and other Shoreline Structures

- All structures subject to Chapter 91 must be structurally sound and not pose an unreasonable threat to navigation, adjacent structures or public health or safety if damaged or destroyed in a storm.



B. Wetlands Design Standards

Wetlands Standards applying to both Inland and Coastal Areas

Protecting Rare Species Habitat. No project may be permitted to have any adverse impact on specified habitat of rare animal species. A map of estimated habitat sites for each town can be found on the Department of Fish and Game (DFG) Web site: http://www.state.ma.us/dfwele/dfw/nhesp/nhspecies.htm.

If the project site is in one of the mapped estimated habitats, applicants should refer to the Wetland Regulations at 310 CMR 10.37 (for coastal wetlands) or 310 CMR 10.59 (for inland wetlands) for the procedures to follow in order to determine if the project is in fact in rare species habitat and if it will adversely impact it. Generally, if the Massachusetts Natural Heritage and Endangered Species Program finds that a project would have any such adverse impacts, that program would work with the applicant to redesign the project in order to avoid or mitigate such impacts. If such a redesign were impossible, the project would not be allowed to proceed.

Maintaining Proper Water Circulation.
Small docks and piers must be constructed so as to prevent or minimize adverse effects on water circulation in inland wetlands and certain coastal wetland resource areas (Land Under Ocean, Tidal Flats, Rocky Intertidal Shores, Salt Marshes, Salt Ponds, and Land Containing Shellfish, unless such coastal areas are specifically found by the conservation commission not to be significant to Marine Fisheries, Land Containing Shellfish, and Wildlife Habitat).

Providing adequate spacing between pilings allows reasonably unimpeded water flow. Wooden pilings should be spaced no closer than twenty (20) times the diameter of the piling. Batter piles, batter boards, and wave attenuators (used to dissipate wave energy) interfere with water circulation. Any cross or transverse bracing must be placed above the elevation of the high water mark.

For coastal wetland areas subject to the ebb and flow of the tide, the lowest structural member (generally the horizontal support beam or "stringer") of floats (or if there are no floats, the seaward edge of the pier) should be at least 18 inches (1.5 feet) from the bottom at low tide. Where feasible, floats should be sited so they will float no lower than this height (18 inches) during low tide. Where this is not feasible (e.g., in locations with extensive mud flats due to tidal range, or in those circumstances where a shorter pile has less environmental impact), projects can use float stops or collar ties (or legs on rocky bottoms) to ensure an 18-inch height at low tide. Following these standards should lead to no impairment of water circulation.

Maintaining Adequate Light to Preserve the Productivity of Wetlands Vegetation and Eelgrass Beds:
Pile supported piers constructed in inland and certain coastal wetland resource areas (salt marsh, salt ponds, and those portions of Land Under the Ocean containing eelgrass) need to be constructed in such a manner as to have no adverse effect on plant productivity. This requirement is met by avoiding such vegetation where possible; placing the pier decking at an adequate height above the high water mark; limiting pier length and width; providing spacing between deck planking, and orientating the pier as close as possible to a north-south orientation. These Wetlands requirements also interplay with Waterways regulatory requirements, which require piers to be constructed in such a manner so as to permit unobstructed lateral public access under, over, or around the pier.

Piers located in inland wetlands resource areas (ponds, lakes, and rivers) typically do not include a combined pile-held pier and float system because they are not subject to daily tidal fluctuation. Also, piers located in great ponds or rivers are more likely to be built so they can easily be removed prior to the winter to avoid ice damage. Inland pier systems typically consist of pile-held decking (piles are typically pipe-piles or wood), piers constructed on cradles that rest on the bottom (versus being driven into the substrate), or piers pinned to the

land and supported on the water side by floats mounted to the decking bottom (or in some cases, bottom anchored floats). Because of these differences, inland piers tend to be constructed at an elevation just above the ordinary high water line to allow for egress to a boat, whereas coastal piers also need a ramp connecting to a float to allow egress to a boat at all ranges in the tidal cycle (boat is berthed to the float which goes up and down with the tide).

Avoidance: Keeping these differences between inland and tidal waters in mind, the first step in siting a pier is to determine if a location is available that will avoid or minimize putting the pier over wetlands vegetation. Avoidance is especially critical over existing or historically present eelgrass beds and in Land Containing Shellfish.

Pier Height: Higher piers allow for better light penetration to underlying vegetation and assist in preventing storm damage. The Waterways regulations require a five (5) foot minimum height above mean high water mark for pier decking in Great Ponds and coastal tidelands to provide for unobstructed lateral passage under the pier (note: this requirement may be waived if alternative measures are taken to provide for public pedestrian access over or around the pier). Constructing the decking at least 5 feet above mean high water/ordinary high water/annual high water also serves to minimize adverse shading impacts on vegetation.



Although a specific height requirement is not mandated under the Wetlands Protection Act regulations, elevating the structure above vegetation is essential to minimizing the effects of shading. The New England Division of the U.S. Army Corps of Engineers suggests that the height of a pile-supported structure above the mean high water be at least as great as the width (a 1:1 height to width ratio) to provide adequate height for existing vegetation. See Land Containing Shellfish in the section entitled "Wetland Standards Applying to Coastal Areas Only", below, for additional requirements if a pier is proposed in this resource area.

When there is no alternative to building over eelgrass beds, floats (or if no floats, the seaward end of the pier) should be at least four (4) feet from the bottom at low tide. It should be noted that eelgrass beds are ephemeral and historic presence of eelgrass should be considered, even if not currently present, in order to prevent the exclusion of future eelgrass bed expansion or colonization. Eelgrass is considered to be present if depicted on maps produced by Massachusetts Geographic Information System (MGIS), DEP, or other credible source (on the web, see http://www.mass.gov/mgis/); or if not mapped, a site field survey indicates its presence.

Float Height: Floats should be located at the end of the pier in deeper water. The bottom of the float or pier should be at least 18 inches from the bottom (measured at low tide in coastal wetland resource areas and ordinary high water or annual high water for inland wetland resource areas). See *Land Containing Shellfish* in the section entitled *"Wetland Standards Applying to Coastal Areas Only"*, page 15, for additional requirements if a float is proposed in this resource area. Also, see the previous paragraph regarding restrictions on the siting of floats in eelgrass beds.

Pier Length: Shorter piers produce less adverse shading effects on vegetation than longer piers. The Waterways regulations require the pier to be no longer than the distance necessary to reach navigable water depths.

Pier Width: Narrower piers provide less adverse shading effects on plant productivity than wider piers. The U.S. Army Corps of Engineers' Florida District limits pier widths to four (4) feet to minimize width impacts on plant productivity. Typical small docks and piers in Massachusetts are 3 feet wide.

Plank Spacing: Planks should be spaced at least ¾ inch apart to permit light penetration. Alternate spacing may be used if the deck material used provides a similar or greater degree of light penetration (such as perforated aluminum, fiberglass, or plastic grates; any such grates should contain an anti-slip texture integrally moulded to the top surface to provide for safety).

Orientation: If placing the pier over wetlands vegetation cannot be avoided, the pier should be orientated as close to a north-south orientation as possible (consistent with site constraints and environmental and navigational considerations). Research indicates a north-south orientation is least likely to adversely affect aquatic vegetation through shading.

Wetlands Standards Applying to Coastal Areas Only (see also "Wetlands Standards Applying to both Coastal and Inland areas" above)

Maintaining water quality. This includes other than normal fluctuations in turbidity, addition of pollutants, and the level of dissolved oxygen or temperature. This standard applies to any portion of a project located on Land Under the Ocean; the tidal flat portion of Coastal Beach; Salt Marsh; Salt Pond; or Rocky Intertidal Shore, unless such area is specifically found not to be significant to Marine Fisheries, Land Containing Shellfish and Wildlife Habitat.

Turbidity is the clouding up of water from stirred up sediments. It harms vegetation by reducing light penetration and harms fish by clogging gills and hurts fish eggs, larvae, and shellfish by causing abrasions from sediments. Turbidity related to the use of small docks and piers (versus their construction, which is discussed below) can be minimized by:

- Considering where the floats will be stored and launched, how and at what tide range they will be installed, and by the nature of the bottom substrate. In some circumstances, less turbidity may result if the floats are rafted from the storage location and installed at high tide.

- Ensuring that the end of the pier or float is sufficiently high at low tide to prevent boat engine propellers from creating "prop wash." See *"Maintaining Proper Water Circulation,"* and *"Maintaining the Productivity of Salt Marsh Vegetation and Eelgrass Beds,"* page 15, regarding ways to ensure proper height of piers and floats above the water bottom.

- Driving, rather than jetting, pilings during construction.

The "addition of pollutants" may come in various ways: leaching of pressure treated wood preservatives, breakdown of flotation materials, and accidental spillage during the application of paint or other preservatives during maintenance or storage.

Leaching of Wood Preservatives. Paints and wood treatments containing creosote and pentachloralphenols are extremely toxic, and should be explicitly forbidden. So-called "CCA pressure treated" lumber (i.e., that treated with copper chromated arsenic, or CCA) has been banned by the US Environmental Protection Agency (EPA) for residential uses after December 31, 2003, due to the dangers posed to human health from the leaching of arsenic. However, the ban does <u>not</u> apply to use of CCA lumber for docks or piers. While CCA lumber is not prohibited under the Wetlands Protection Act for use as both pilings and decking, DEP recommends that alternative materials, including pressure treated lumber that does not contain CCA be considered if direct skin exposure to this type of lumber is a concern. The advantage of CCA lumber is that it extends the life of a dock and therefore minimizes the need to rebuild it or to drive additional piles. It can also save money for the dock owner. On the other hand, leaching of chemicals contained in CCA lumber may be damaging to human health

and possibly to the aquatic environment. There are a number of alternatives to CCA treated lumber which applicants should at least know about.

For pilings, there are several pressure treated wood formulae that do not contain arsenic and have been approved by EPA for residential uses: Ammoniacial Copper Quaternary (ACQ) or "Kodiak Wood", copper azole, copper dimethyldithiocarbamate, copper citrate, copper boron azole; copper8-quinolinate, and borate-based wood preservatives. None of these contain arsenic and all have been shown to be effective. They are on the order of 5-8% more expensive than CCA-treated woods but the material costs for pilings are a small part of the overall cost of construction of a dock.

Application of paint and wood treatments. Conservation Commissions should condition the Order (permit) to require that any preservatives be applied on land and away from the water and wetlands, if possible, such as to a float being seasonally stored on land. For fixed elements, such as piles and decking, a condition should be included in the Order which limits the applications of preservatives to no more than once a year, requires only the minimum amount of preservative to be applied to limit runoff of excessive amounts into the underlying water, and which does not allow for application of preservatives to any elements of the pier below the plane of mean high water.



Where it is feasible to reconfigure a pier to avoid or minimize siting it on Land Containing Shellfish, this should be done. To the extent that a pier must be at least partially located in Land Containing Shellfish, adverse impacts on shellfish may be minimized by placing limits on the number and spacing of piles.

For piers sited on Land Containing Shellfish that was identified by the local Shellfish Constable, a conservation commission may, after consultation with the Constable, permit the shellfish to be moved to a location approved by the Division of Marine Fisheries (MADMF). Work on the pier may not begin until after replanting of the shellfish has commenced. For piers sited on Land Containing Shellfish designated by the MADMF, the applicant may be required to purchase seed shellfish and seed adjacent areas at the discretion of the Shellfish Constable prior to commencement of construction, and under his supervision. Projects that MADMF determines will have a permanent adverse impact on the productivity of a significant shellfish resource should not be allowed.

Floats (or if there are no floats, the seaward end of the pier) must be at least 2 ½ feet from the bottom during low tide to prevent adverse impacts on shellfish. Where possible, floats should be removed in the off-season so as to allow easier access for shell fishing. See "***Maintaining Adequate Light to Preserve the Productivity of Wetlands Vegetation and Eelgrass Beds***" (pg. 15), regarding methods for keeping floats from resting on or near the bottom.

See also "***Standards for Avoiding or Minimizing Temporary Construction Impacts***" on page 20, regarding Land Containing Shellfish.

Maintaining the Stability of Coastal Banks & Beaches and the Natural Movement of Sand Dunes; Protecting against Storm Damage.

These standards apply (as specified below) to any portion of a project located on Coastal Beach or Dune (including that on Barrier Beaches); Coastal Bank; or Land Subject to Coastal Storm Flowage (the so-called "one hundred year floodplain"). Note that any alteration of a Coastal Bank, Barrier Beach, or Coastal Dune requires the filing of an Environmental Notification Form (ENF) with the Massachusetts Environmental Policy Act office (http://www.state.ma.us/envir/mepa/index.htm). Thus piers and associated walkways should be avoided in these resource areas wherever possible.

Coastal Banks act as a vertical buffer for storm damage prevention. Cutting into the bank to install a ramp should not be allowed, as the cut will provide an avenue for wave run-up and rainfall

to erode the bank. Ramps and walkways leading to docks and piers may have adverse impacts to stability of coastal banks unless properly sited and designed. Conservation Commissions should require revegetating areas disturbed by construction and not allow ancillary activities around the pier or walkway that may result in erosion.

Anadromous fish, or migratory fish, in New England include: Atlantic Salmon, American Shad, Herring, Sea Lamprey, Sturgeon, Striped Bass, and Rainbow Smelt.

- Coastal Beaches. Ramps and walkways leading to docks and piers must be designed and sited to avoid erosion and to maintain the volume and form of the beach or downdrift beach.
- On Coastal Dunes, pedestrian walkways may be allowed under the Wetland Protection Act regulations if they are designed to minimize disturbance to the dune, vegetative cover, and bird-nesting habitat.

Fish Runs. Fish runs are identified by the MA Division of Marine Fisheries and mapped on the Coastal Atlas of the MA Coastal Zone Management Program (see http://www.state.ma.us/czm). Fish runs are waters that serve as spawning or feeding grounds or passageways for fish species that spawn in fresh water but live in salt water or vice versa.

The "100-year Floodplain" is the area that would be inundated by a flood waters during a 100 year flood.

The construction and use of small docks and piers that do not involve dredging are unlikely to cause significant adverse impacts on fish runs. Larger dock construction, dredging and filling within fish runs can generally be addressed by requiring Time of Year (TOY) Restrictions that avoid work within the fishrun between March 15th and June 15th of any given year. Other TOY Restrictions may also be appropriate if recommended by the Division of Marine Fisheries.

1 Fish runs under the wetland regulations extend no further than the inland boundary of the "coastal zone", as defined in 301 CMR 21.05. This may include the portions of a fish run going as far as the inland boundary of a coastal town if it falls "inland of the roads, rail lines and rights of way described in the (MA Coastal Zone Management) Boundary Appendix."

Wetland Standards Applying to Inland Areas Only (see also "Wetlands Standards Applying to both Coastal and Inland Areas")

Under the Wetlands Protection Act Regulations for inland wetland resource areas, local conservation commissions (and DEP on appeal) may grant "limited project" status to small docks and pier projects pursuant to regulations at 310 CMR 10.53(3)(j). Such status provides some less stringent standards for small docks, piers, catwalks, and footbridges than the normal performance standards for the affected resource areas.

Alternatives Analysis. In considering whether to grant limited project status to a particular proposal, the conservation commission (or DEP on appeal) is directed under the regulations (310 CMR 10.57(3)) to *"consider … the availability of reasonable alternatives to the proposed activity."* Such alternatives generally include redesigning or repositioning the dock and pier so that it would have fewer adverse impacts on wetlands resource areas. Such alternatives should also consider whether a particular design or configuration is necessary to protect public navigational or access right under Chapter 91.

The limited project described in 310 CMR 10.53 (3)(j) contains three specific performance standards relating to protecting rare wildlife habitat, preserving adequate light to maintain existing (pre-construction) vegetation, and maintaining reasonably unobstructed flowage of water. Requirements for meeting these standards are discussed in the section entitled "Wetlands Standards Applying to both Inland and Coastal Areas (above)."

If for any reason a small dock or pier cannot meet either of the last two standards listed directly above (rare species standards must always be met), applicants may still qualify for another "limited project" applying to "water dependent uses" under 310 CMR 10.53(3)(l). This limited project has considerably more stringent performance standards:

- The project must meet the normal performance standards for bordering vegetated wetlands.
- Normal performance standards for flood control and prevention of storm damage in other (non-BVW) wetland resource areas must also be met.



Standards for Avoiding or Minimizing Temporary Construction Impacts to Coastal and Inland Wetlands

- Impacts on salt marsh and bordering vegetated wetlands can be avoided by working out along the completed portions of a walkway or from a floating platform (a boat or barge), so long as it doesn't touch the bottom at any time. When this is not possible, such equipment should exert low ground pressure. Machines are currently available that exert less than two pounds per square inch. Only if absolutely necessary should equipment be allowed in bordering vegetated wetlands (BVW) or salt marshes.
- Installation of piles through "jetting" with high-pressure hoses typically disturbs a surrounding area potentially depopulating vegetation that may have difficulty reestablishing itself and disturbing bottom sediments. This may smother fish eggs and clog the gills of adult fish. Pilings should normally be installed by pile driving or auguring although it is permissable to allow a minimal amount of low pressure jetting to set piles. If the bottom sediments are contaminated, commissions may deny the use of jetting to set piles.
- Fill should not be allowed on BVW or salt marsh to provide footing for equipment.
- Materials with potential to contaminate the environment should be removed right away; e.g., those containing petroleum, etc. Debris should be continuously cleaned to lessen environmental impacts.
- Equipment storage should not occur in vegetated wetlands, in the intertidal zone, or on dunes.
- If it can be reasonably done, construction during winter months tends to have fewer adverse environmental impacts.
- Temporary construction impacts in Land Containing Shellfish may be permitted in an Order of Conditions. However, shellfish within areas designated by the local shellfish constable should be relocated. Shellfish beds within areas designated by the Massachusetts Division of Marine Fisheries must be reseeded so that it will be returned substantially to its former productivity within one year from the commencement of work.

Sample Wetlands Permit Conditions for Small Docks and Piers

Below are some standard conditions that have been used by the DEP regional offices in their Superseding Order of Conditions when permitting small docks and piers. These conditions are offered as examples only. It may not be feasible or appropriate to utilize all of these conditions. Conservation commissions are encouraged to select the appropriate conditions, tailored to the specific project site and conditions and any others that they deem appropriate. Applicants planning to construct a small dock or pier should design these structures to meet the conditions that are appropriate to their project.

General Conditions:

- No work shall take place until all administrative appeal periods from the order have elapsed, or if an appeal has been filed, until all proceedings before the Department have been completed.
- Dredging is neither proposed nor permitted under this filing.
- Future maintenance of the approved structure, in strict compliance with the plan of record and the conditions of this Order, is permissible.

Conditions to Protect Water Quality:

- Construction may be accomplished from a barge or boat operating in at least two feet of water. The barge or boat shall not be permitted to ground out at low tides.
- Construction of the pier shall be accomplished by maximizing access from the water and upon completed portions of the pier. No heavy construction equipment, vehicles or barges are permitted on bordering vegetated wetland, salt marsh or tidal flat during construction of the pier.
- The use of chromated copper arsenate (CCA) treated wood and creosote treated timber is prohibited. Wood preservative must be dry before the treated wood is used in construction.
- Piles placed below the plane of Mean Low Water (MLW) shall be mechanically driven to refusal, not jetted. The piles in the salt marsh and coastal bank shall be placed by hand.

Condition used to protect water quality when turbidity or shellfish spawning is an issue:

- Minimal jetting of the piles to set them into place is permitted. Then the piles shall be driven to refusal, or if this is not possible, until stable.
- Motorized vessels shall be moored stern seaward at the float or end of the pier to prevent "propeller dredging" and turbidity.

Conditions to protect bordering vegetated wetland, eel grass, and salt marsh vegetation:

- To allow sunlight to penetrate the vegetation below, the pier and walkway is to be elevated 1 foot above the marsh for every foot of its width, and individual deck planks of the structure are to be spaced at least ¾ inch apart.
- Salt marsh vegetation shall be avoided during construction.
- Any area that is disturbed during construction is to be revegetated immediately, or as soon thereafter as the growing season commences, with appropriate local indigenous vegetation.
- Motorized vessels shall be moored stern seaward at the float or end of the pier to prevent "propeller dredging," turbidity, and alteration to vegetation.



Condition to protect Land Containing Shellfish designated significant by the Town or the Department:

- Prior to commencement of construction and after consultation with the local shellfish officer, any shellfish in the immediate vicinity of the pier shall be moved and replanted in a suitable location approved by the Division of Marine Fisheries [310 CMR 10.34 (6)].

When the state Division of Marine Fisheries designates that the project is within significant land containing shellfish use this language instead:

- Prior to commencement of construction and at the discretion of the Shellfish Constable, and under his supervision, the applicant may be required to purchase seed shellfish and seed adjacent areas. The quantity of seed shall be determined and approved by the Shellfish Constable.

Condition to protect stability of coastal banks, to protect salt marshes or dunes, if there are seasonal portions of the structure:

- The seasonal (ramp and) float(s) is to be stored at a suitable upland location.

In providing the design standards and conditions for protecting wetland resource areas and the public's rights to tidelands, DEP hopes that this guide has clarified many of the questions that arise both from applicants and local officials. If there are any further questions, we encourage you to go to the DEP web site address at: http://www.state.ma.us/dep/brp/waterway/waterway.htm to obtain more information and resources available to you.

APPENDICES

Glossary

100-year floodplain – The area that will be inundated by floodwaters during a 100-year flood. The 100-year flood has a 1% chance of occurring at least once in any given year. Therefore, the 100-year flood could occur more than once a year. The 100-year floodplain is regulated under the Wetlands Protection Act regulations as "Bordering Land Subject to Flooding"(BLSF) and "Land Subject to Coastal Storm Flowage" (LSCSF). The location of the 100-year floodplain is determined by reference to the most recently available flood and coastal profile data prepared for each community by the Federal Emergency Management Agency (FEMA). BLSF and LSCSF boundaries must be determined in accordance to the definitions specified in the wetlands regulations at 310 CMR 10.04 and 10.57.

Abutter –

a) Under Chapter 91 Waterways regulations, an abutter is the owner of land which shares, along the water's edge, a common boundary or corner with a project site, as well as the owner of the land that lies within 50 ft. across a water body from such a site. Ownership is determined by the records of the local tax assessors office: or

b) Under the Wetlands Protection Act, an abutter is the owner of properties within 100 ft. of the property line of the land where the activity is proposed, …on the most applicable tax list of assessors, including, but not limited to, owners of land directly opposite said proposed activity on any public or private street or way, and in another municipality or across a body of water.

Anadromous Fish - Fish that enter fresh water from the ocean to spawn.

Areas of Critical Environmental Concern - Areas of Critical Environmental Concern (ACECs) are places in Massachusetts that receive special recognition because of the quality, uniqueness, and significance of their natural and cultural resources. These areas are identified and nominated at the community level and are formally reviewed and designated by the state's Secretary of Environmental Affairs. State agencies, such as DEP, that are under the Secretariat's purview are directed to acquire useful scientific data on ACECs, ensure that activities in or impacting an area minimize adverse effects on the resources, and apply close scrutiny to the environmental review of projects subject to their jurisdiction.

Bordering Vegetated Wetlands – A type of freshwater wetland that is protected under the Wetlands Protection Act. It is a swamp, bog, wet meadow, or marsh that borders on a creek, stream, river, pond or lake.

Catadromous fish - Fish that enter salt water from fresh water to spawn.

Coastal Beach – Unconsolidated sediment subject to wave, tidal, and coastal storm action that forms the gently sloping shore of a body of salt water and including tidal flats. Coastal beaches extend from the low water line landward to the dune line, coastal bank line, or the seaward edge of existing man-made structures, when the structures replace one of the above lines, whichever is closest to the ocean.

Coastal Dune – Any natural hill, mound, or ridge of sediment landward of a coastal beach deposited by wind action or storm overwash. Coastal dune also means sediment deposited by artificial means and serving the purpose of storm damage prevention or flood control.

Commonwealth Tidelands – Tidelands held by the Commonwealth in trust for the benefit of the public, or held by another party by license or grant of the commonwealth subject to an express or implied condition that it be used for a public purpose. Generally, Commonwealth Tidelands running seaward of the historic low water mark or of a line running 1650 feet seaward of the historic high water mark, whichever is farther landward.

Glossary

Conservation Commissions – Conservation commissions are volunteer boards appointed by the executive authority in each community to administer the Massachusetts Wetlands Protection Act on the local level. (The mayor or board of selectmen assumes the conservation commission's responsibilities where no commission has been established.)

Deposition – The process of sedimentation or the placing of a solid material from a state of suspension or solution in a fluid (usually air or water).

Designated Port Areas – Areas that have been developed for maritime commerce and industry to promote commercial fishing, shipping and other vessel related activities associated with waterborne commerce and production activities reliant upon marine transport or the withdrawal or discharge of large volumes of water. Also, these areas are almost completely developed where few or no natural land forms or vegetation remains. Designated Port Areas are established and modified through the Massachusetts Coastal Management Office.

Determinations of Applicability –

a) A written finding by a conservation commission as to whether a site or the work proposed is subject to the jurisdiction of the Wetlands Protection Act.
b) DEP's Waterways Program may issue a separate type of Determination of Applicability that applies to Chapter 91 jurisdiction.

Dredging – The removal of materials including, but not limited to, rocks, bottom sediments, debris, sand, refuse, plant or animal matter in any excavating, cleaning, deepening, widening, or lengthening, either permanently or temporarily, of any flowed tidelands, rivers, streams, ponds, or other waters of the commonwealth.

Fill – Any unconsolidated material that is confined or expected to remain in place in a waterway. This does not include: material placed by natural processes, material placed on a beach for beach nourishment purposes, and dredged material placed below the low water mark for purposes of subaqueous disposal.

Filled tidelands – Former submerged lands and tidal flats which are no longer subject to tidal action due to the presence of fill.

Fish Runs – Areas within estuaries, ponds, streams, creeks, rivers, lakes or coastal waters, which are spawning or feeding grounds or passageways for Anadromous or Catadromous fish.

Flowed tidelands – Present submerged lands and tidal flats that are subject to tidal action.

Great ponds – Great ponds and lakes are bodies of water that contained 10 acres or more in their natural state. Ponds that were 10 acres or more originally, but have become smaller for any reason, are still considered to be great ponds.

High Water Mark – For tidelands, the present high tide line as established by the present arithmetic mean of the water heights observed at high tide over a specific 19-year Metonic cycle, determined by using hydrographic survey data of the National Ocean Survey and the US Department of Commerce. For great ponds, rivers and streams, the present arithmetic mean of high water heights observed over a one-year period using the best available data as determined by DEP.

Historic High Water Mark – The high water mark that existed prior to human alteration of the shoreline by filling, dredging, excavating, impounding, or by other means.

Historic Low Water Mark – The low water mark that existed prior to human alteration of the shoreline by filling, dredging, excavating, impounding, or by other means.

Intertidal – The area between the high water and low water marks.

Jetting - Injection of water under pressure, usually from jets located on opposite sides of a pile, to pre-excavate a hole for inserting a pile into the ground.

Land Containing Shellfish – Land under the ocean, tidal flats, rocky intertidal shores, salt marshes, and land under salt ponds when any such land contains shellfish.

Land Under the Ocean – Land extending from the mean low water line seaward to the boundary of the municipality's jurisdiction and includes land under estuaries.

Low Water Mark – the present mean low tide line, as established by the present arithmetic mean of water heights observed at low tide over a specific 19-year Metonic cycle, determined by using hydrographic survey data of the National Ocean Survey and the US Department of Commerce.

Notice of Intent – An application under the Wetlands Protection Act to do work that will alter any area(s) subject to jurisdiction of the Act.

Order of Conditions – A document issued by the municipal conservation commission under the Wetlands Protection Act containing conditions that regulates or prohibits an activity that alters any area(s) subject to jurisdiction of the Act.

Private Tidelands – Tidelands held by a private party subject to an easement of the public for the purposes of navigation and free fishing and fowling and of passing freely over and through the water. Generally, private tidelands lie landward of the historic low water mark or of a line running 1650 feet seaward of the historic high water mark, whichever is farther landward.

Public Waterfront Act – Massachusetts General Laws Chapter 91, also known as the state "waterways" law administered by the Waterways program.

Rocky Intertidal Shores - Naturally occurring rocky areas, such as bedrock or boulder-strewn areas between the mean high water line and the mean low water line.

Scouring – The clearing and digging action of flowing water, especially the downward erosion caused by stream water in sweeping away mud and silt from the streambed and outside bank of a curved channel.

Shellfish – Includes the following: Bay scallops, Blue Mussel, Ocean Quahog, Oyster, Quahog, Razor Clam, Sea Clam, Sea Scallop, and Soft Clam.

Structure – Any man-made object which is intended to remain in place in, on, over, or under tidelands, great ponds, or other waterways. Structures do not include any mooring, float or raft which has been authorized by annual permit of the local harbormaster.

Glossary

Superseding Determination of Applicability - A written finding by DEP as to whether a site or the work proposed is subject to the jurisdiction of the Wetlands Protection Act. DEP's finding occurs after an appeal of a conservation commission's Determination of Applicability.

Superseding Order of Conditions – A document issued by DEP under the Wetlands Protection Act containing conditions that regulates or prohibits an activity that impacts or alters wetland resource area(s) specified under the Act. DEP's Order occurs after an appeal of a conservation commission's Order of Conditions.

Tidelands – Present and former submerged lands and tidal flats lying below the present or historic high water mark, whichever is farther landward, and the seaward limit of state jurisdiction. Tidelands include flowed and filled tidelands, private tidelands and Commonwealth Tidelands.

Water-dependent Uses – Those uses and facilities which require direct access to, or location in, waterways and therefore cannot be located inland, including but not limited to: marinas, recreational uses, navigational and commercial fishing and boating facilities, water-based recreational uses, navigation aids, basins, and channels.

Waterway – any area of water and associated submerged land or tidal flay lying below the high water mark of any navigable river or stream, and Great Pond, or any portion of the Atlantic Ocean within state jurisdiction.

Wetlands Protection Act – The Massachusetts Wetlands Protection Act (Massachusetts General Laws Chapter 131, Section 40) states that no person may remove, fill, dredge, or alter certain wetland resource areas without first filing a Notice of Intent and obtaining an Order of Conditions. The Act requires that the Order contain certain conditions to preserve and promote the protection of public or private water supply and groundwater supply, flood control, storm damage protection, the prevention of pollution and the protection of fisheries, land containing shellfish, and wildlife habitat.

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