# Coastal Features CRMC Helps to Launch Public

# Benefit Aquaculture/Shellfish Restoration Project

**Warwick -** The quickness and ease by which Senator Jack Reed (D-RI) snipped the yellow ribbon to mark the symbolic beginning of a new aquaculture project in Rhode Island belied the extraordinary amount of time and energy spent to realize the day's cause for celebration. While the project to grow-out one million seed clams via aquaculture technologies is noteworthy in itself, the forging of the unlikeliest of alliances to do so is at least equally important and certainly worth the effort behind its success. This project marks the first time that the Rhode Island Shellfishermen's Association (RISA), a traditional opponent to aquaculture, is participating as a lead partner in an aquaculture project in the state.

The project is a result of the Rhode Island Aquaculture Initiative, a federal effort championed by U.S. Senator Jack Reed (D-RI), which makes \$1.5 million in federal funds available to the aquaculture industry in Rhode Island.



Let the Shellfish Restoration Begin: (*l-r*) CRMC Chairman Mike Tikoian, U.S. Senator Jack Reed (D-RI), and Warwick Mayor Scott Avedisian, share the ribbon cutting duties to kick off the Rhode Island Public Benefit Aquaculture/Shellfish Restoration Project at Greenwich Bay Marina.

COASTAL RESOURCES MANAGEMENT COUNCIL

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# Coastal Zone '03

The CRMC's Coastal Geologist, Janet Freedman, and Coastal Policy Analyst, Megan Higgins, Esq., recently attended Coastal Zone '03 in Baltimore, where they presented their research on the Public Trust Doctrine, the location of the mean high tide along the coast of Rhode Island, and their impact on private vs. public property rights. This issue of Coastal Features includes their research and conclusions. The reader is directed to two articles, beginning on pages 4 and 6 respectively, that tell an interesting and informative story about the public's right to access to the shore in Rhode Island, and the environmental and legal processes that play vital roles in shaping the realities of public access in the state.

Standing on the dock donated by the Greenwich Bay Marina to support the project's grow-out facilities, CRMC Chairman Mike Tikoian thanked Senator Reed for the Rhode Island Aquaculture Initiative - or as he referred to it, "the Reed Aquaculture Initiative" - and praised him as "a superb ambassador for Rhode Island in general, as well as a dogged proponent for the management of our coastal resources." Tikoian further noted that "when CRMC received this funding, we put together a unique consortium of state, university and private sector resources to ensure that the Initiative would have the maximum impact. This group of dedicated individuals have met that goal, with a number of exciting projects being funded that will enhance the role of aquaculture in Rhode Island. And in keeping with the day's event, the Chairman emphasized "the direct result of the Initiative's efforts is the RISA project that we are here today to celebrate - that of a shellfish upweller located within a commercial marina." Tikoian called the project "a unique use of aquaculture technology, which is developed and sold here in Rhode Island, that is being used to enhance a public resource in concert with a private commercial enterprise. He concluded his comments by thanking "the Shellfishermen's Association for their continued work in striving to meet the needs of their industry by seeking unique public/private opportunities such as this, and the Greenwich Bay Marina for recognizing the importance of this partnership and its goals."

The RISA President, Michael McGiveney, announced that his organization has partnered with Roger Williams University to secure \$100,000 from the Rhode Island Aquaculture Initiative to enable RISA to provide the personnel and expertise needed to conduct the work of growing the seed clams to a size suitable for transplantation to beds in Greenwich and Narragansett Bays. RISA is working with CRMC Aquaculture Coordinator Dave Alves and Dr. Timothy Scott of Roger Williams University, to plan the project and conduct the necessary maintenance and transplanting operations. The seed clams, which consist entirely of **quahogs***Mercenaria mercenaria*, are expected to be transplanted to traditional shellfishing areas later this year, after they have reached approximately thumbnail size. McGiveney noted that a primary benefit of transplanting the clams at this size is that they tend to be more resistant to predation by crabs, whelks, and other creatures that feast on smaller more vulnerable seed clams in the wild.

But before the clams are transplanted, they must be raised to planting size in the upwellers that are secured to the underside of the dock donated by the Greenwich Bay Marina. The upwellers are special cages designed to hold large numbers of seed clams while being continually submerged in the seawater that contains an abundant supply of phytoplankton, a rich food source for the clam's growth. Besides being designed to supply a constant flow of phytoplankton rich seawater to the seed clams, the upwellers also

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The CRMC looks forward to the success of this new beginning and will continue to nurture the unique partnership that has resulted from the hard work, patience, and cooperation of the numerous individuals from the aquaculture industry, commercial shellfishery, universities, and government agencies that have led us to this successful venture.



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# Multilanguage Pamphlet Promotes Responsible Use of Public Rights-of-Ways to the Shore

As the lead agency responsible for promoting public access to the shore in Rhode Island, the CRMC is pleased to announce the availability of a new pamphlet designed to promote public access in a respectful and responsible manner. The pamphlet is titled "A Code of Conduct While Using Public Rights-of-Way to the Shore in Rhode Island," and is written in seven languages in order to more effectively educate an increasingly diverse public that fishes and recreates along the Rhode Island shore. An initial printing of 50,000 pamphlets will be distributed in partnership with the Rhode Island Sportsfishermen's Association, coastal municipalities, and others who can help identify bait shops and other locales where the diverse groups that are targeted by the pamphlet will most likely be reached. The CRMC will also provide the pamphlet in digital format to groups that wish to print additional copies for distribution. Please contact the CRMC at (401) 783-3370 or www.crmc.state.ri.us to request pamphlets or a digital copy of the pamphlet.



## Public Access Code of Conduct

In a state where so much of the coastline is privately owned, Rhode Island is fortunate to have hundreds of public rights-of-ways to the shore. Many members of the public rely on rights ofways to the shore to fish, pionic, or to simply enjoy the scenic beauty of the Rhode Island coast. But along with our constitutional "privileges to the shore" comes the expectation that all members of the public should exercise their rights in a respectful and responsible manner. This especially applies every time you use a public right-of-way to gain access to the shore for whatever purpose. When using a public right-of way to the shore, PLEASE REMEMBER

- Leave only footprints. Dispose of litter in trash bins. If none is available, take your trash back home with you. PLEASE DON'T LITTER AT THE SHORE
- Respect neighbors' property rights. Stay on the public pathway. PLEASE DON"T TRESPASS ONTO PRIVATE PROPERTY!
- If public aprking is available at the right-of-way, don't block the right-of-way with your automobile. Always obey local parking laws and PLEASE DON'T BLOCK PRIVATE DRIVEWAYS IN THE AREA!

# WHAT DO YOU MEAN BY MEAN HIGH TIDE? THE PUBLIC TRUST DOCTRINE IN RHODE ISLAND

Janet Freedman, RI Coastal Resources Management Council Megan Higgins, RI Coastal Resources Management Council

#### INTRODUCTION:

The Rhode Island State Constitution guarantees shoreline privileges that include but are not limited to fishing from the shore, collecting seaweed, leaving the shore to swim in the ocean and passing along the shore (Article I, Section 17). Traditionally the "seaweed line" has been interpreted as the boundary between private property and public trust lands. On wave dominated shorelines, the position of the "seaweed line", or the last high tide swash line (LHTS), is dependent on the wave climate as much or more than tidal phase.

#### METHODS:

Long term beach profile data collected at Cha-EZ by the University of Rhode Island Department of Geosciences was examined to determine the relationship between the mean high tide line (MHW) and the last high tide swash line (LHTS). Profilers use a modified version of the Emory Method (Rosenberg, 1985) which allows rapid data collection, with little in the way of high tech equipment. The profiles are measured weekly and data is used to examine shoreline dynamics, to quantify beach volume changes and to study long term trends (Blais, 1986; Harwood, 1993). Data records include time the profile was taken, wave height, wind speed and direction, and, sometimes but not always, details such as the location of the last high tide swash line and the current swash line where the profilers hit the water. The distance of the LHTS and MHW line from the profile datum was calculated for the 19 year Tidal Epoch between 1983 and 2001. A total of 716 profiles recorded both the LHTS and the MHW. Tide elevations from the Newport, RI tide station were downloaded from the NOAA CO-OPS website (www.co-ops.nos.noaa.gov).





#### RESULTS:

Seven hundred sixteen (716) profiles were examined for this analysis. The results show considerable variability in the distance from datum (0 meters) and the MHW line in the different profiles. This distance was dependent on the amount of erosion or accretion along the shoreline. Average annual distances from datum to the MHW line ranged from a low of 62.35 meters in 1991, the year when the RI coast was hit by Hurricane Bob and the Perfect Storm, to a high of 84.02 meters in 1987, a relatively calm year. The distance from datum (0 meters) to the LHTS line was more variable than MHW within any given year but consistent with the MHW line measures when examining annual trends. Average annual distances from datum to the LHTS line ranged from a low of 44.48 meters in 1991 to a high of 64.81 meters in 1987. The average distance between the MHW and LHTS lines was consistently 19-20 meters. The same uniformity is seen when comparing the average annual distance between the MHW and LHTS lines over the 1983-2001 Tidal Epoch.

#### CONCLUSIONS:

The distance of the LHTS and MHW lines seaward from the profile datum is influenced by the shape of the shoreline and the amount of wave energy. Variability in the position of the MHW line and the LHTS line is due to erosion and accretion. Variability in the position of the LHTS line is also dependent on wave energy. On wave dominated shorelines MHW will always be seaward of the LHTS line. The distance between MHW and the LHTS line averaged 19-20 meters (19.91 meters std. 3.06 meters) at the Cha-EZ profile over the 1983-2001 Tidal Epoch. Thus, MHW is not the appropriate measure for determining the public trust boundary along the Rhode Island South Shore.

## **COASTAL FEATURES**





Cha-EZ pre- and post-storm beach profiles show the landward migration of the mean high water line (MHW) after the storm. The position of the last high tide swash line (LHTS) is dependent on wave height and the beach profile.

We would like to thank Dr. Jon Boothroyd of the University of Rhode Island, Department of Geosciences for giving us access to his

# **POLICY IMPLICATIONS of DEFINING MEAN HIGH TIDE**

#### ABSTRACT:

The Rhode Island Supreme Court in State v. Ibbison , 448 A.2d 728 (1982), determined that the boundary between private and public lands is the mean high tide line defined as "the line formed by the intersection of the tidal plane of mean high tide with the shore." Id. at 730. Mean High Tide is the "arithmetic average of high water heights observed over an 18.6 year Metonic cycle." Id. This measure was considered synonymous to the "land over which the daily tides ebb and flow" referred to in Borax Consolidated Ltd. v. City of Los Angeles, 296 U.S. 10, 22-23, 56 S. Ct. 23, 29 (citing Attorney General v. Chambers, citations omitted). However, on ocean facing shorelines mean high tide will always be seaward of the wetted beach, regardless of the tidal phase. Waves can affect the ebb and flow of the sea on the beach as much as or more than astronomical influences, depending on the slope of the beach and the height of the waves. In the past, wave energy has been included in shoreline mapping using aerial photography or on-site surveys that measured the physical water line on the beach. In the future, LIDAR surveys of the coastlines will facilitate the change from a horizontal to a vertical datum for determining mean high water. If the "mean high water" states do not establish easements over the land between mean high water and the area that is actually covered with water at an average high tide, then vast amounts of public land will be transferred to private ownership. Beach profiles taken over the last twenty-five years by the University of Rhode Island Department of Geosciences are used to highlight this phenomena by showing the relationship between mean high water and the last high tide swash on ocean fronting Rhode Island beaches.



1997 Digital Orthophoto with approximate MHW line (0.5 meters NAVD88) derived from Fall 2000 LIDAR data. Note the swash and wetted beach are several meters landward of the MHW line. LIDAR data was collected in partnership with NOAA CSC, NASA Wallops Flight Facility, USGS Center for Coastal and Marine Geology, and NOAA Aircraft Operations Center.

<u>Mean high tide:</u> The mean average of all the high tides (high high tides and low high tides) occurring over a certain period of time, usually 18.6 years (one lunar epoch).

<u>Mean low tide</u>: The mean average of all the low tides (high low tides and low low tides) occurring over a certain period of time, usually 18.6 years (one lunar epoch).

<u>Ordinary high water mark:</u> The line to which high water normally reaches under natural conditions, but not including floods, storms, or severe meteorological conditions.

<u>Ordinary low water mark:</u> The line to which low water normally reaches under natural conditions, but not including droughts or severe meteorological conditions.

Rhode Island Constitution, Article I, Section 17. The people shall continue to enjoy and freely exercise all the rights of fishery, and the privileges of the shore, to which they have been heretofore entitled under the charter and usages of this state, including but not limited to fishing from the shore, the gathering of seaweed, leaving the shore to swim in the sea and passage along the shore.

## THE PROBLEM

Origin of mean high tide: English common law (1800s)

<u>Purpose:</u> using local law, custom, and practice to establish the boundary between public and private property (the ordinary high water mark)

<u>Problems with its application:</u> there is no mention of mean, average, elevation, or line, but the limit (i.e., mark) reached by the ordinary (not extraordinary) tides; the "line" is an indistinguishable location on the beach; better defined as the theoretical intersection of the elevation of MHT and the beach

<u>Reality:</u> each state has the authority to define the boundary of the lands held in public trust as

outlined by common law; this leads to inconsistency of judicial decisions

Origin of the Misapplication of Common Law:

Borax Consolidated v. City of Los Angeles, 296 U.S. 10 (1935)

<u>Facts:</u> City of LA brought suit to determine title of tideland of Mormon Island, situated in the inner bay of San Pedro (now known as Los Angeles Harbor)

Issue: determination of the boundary between the upland and the tideland

<u>Federal rule</u>: Borax applied the 18.6 year lunar (Metonic) cycle to determine the MHTL\* (where a plane of a certain elevation, determined by the mean height of the tides over an 18.6 year cycle, intersects the contours of a particular beach). \*MHTL as given by the US Coast and Geodetic Survey



Rhode Island state law: State v. Ibbison, 448 A.2d 728 (1982)

Facts: citizens were conducting a beach clean-up in Westerly. Property owner alleged trespass, believing his rights extended to the MHWL. Defendants believed that their rights to traverse the shore extended to the HWM.

Issue: Court was faced with defining how the high water line was to be calculated

Rule: "The mean high tide is the arithmetic average of high-water heights observed over an 18.6-year Metonic cycle. It is the line that is formed by the intersection of the tidal plane of mean high tide with the shore." Id. at 730. (adopting holding of Borax).

Problems with the adoption of Borax by the Rhode Island Judiciary:

Tidal activity on an island in an estuary is significantly different compared to an ocean beach; and

Attempt to apply a statistical average (Metonic cycle) to such a dynamic setting (such as a coastal beach and shoreline)

A better way to define public trust lands in Rhode Island:

1) Adhere to common law

- 2) Better understanding of scientific and meteorological terms
- 3) Convince the RI Supreme Court regarding the best application of Ibbison, rather than modifying or changing Ibbison
- 4) Presentation of the factual dynamics to the Court in a manner that can be understood



# **Council Members**

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Grover J. Fugate, Executive Director Goldman and Biafore, Legal Counsel The following references were used in the preparation of Janet Freedman's and Megan Higgins' research project on the public trust doctrine and mean high tide. Their research, which was presented at Coastal Zone '03 in Baltimore this year, is included in this issue of Coastal Features on pages 4-5 and 6-7.

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