

## SQUID to Address Dredged Sediment Management in Long Island Sound

The Department of Environmental Protection (DEP) Office of Long Island Sound Programs (OLISP) has been chosen to receive one of four fellowships awarded in 1999 by the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center (CSC). Fellow Kevin P. O'Brien, a graduate of Lafayette College and the University of Miami, will develop a Long Island Sound Sediment Quality Information Database (SQUID) using a geographic information system (GIS) and associated databases.

The SQUID will provide the Department with sediment quality information and characteristics that will aid in evaluating the options for handling the disposal of dredged materials. This will be accomplished by compiling all existing sediment quality information in a GIS format. Once the information is available in this format, it will facilitate dredged sediment management decisions with regard to sediment testing plans, selection of priority pollutants for testing, and evaluation of the suitability of sediment for various disposal options, including open water disposal. In addition, the database will make existing sediment quality and distribution information available to the public, including the academic community, in a useable format.

"The Department continues to explore and use the most advanced technology available to manage Connecticut's natural resources," said DEP Commissioner Arthur J. Rocque, Jr. "The valuable information produced through the SQUID project will assist DEP in addressing the complex decisions inherent in managing the disposal of dredged material, and its impacts on Connecticut's natural resources."

O'Brien, who started at DEP on November 1, 1999, will spend two years developing the SQUID and other associated databases. The NOAA CSC Fellowship program was created to provide funding for recent graduates in coastal resource management and policy to conduct two-year projects which provide specific technical assistance for state coastal resource management programs.

For more information on the SQUID coastal fellow project, please contact George Wisker at CT DEP, Office of Long Island Sound Programs, 860-424-3034, or e-mail [george.wisker@po.state.ct.us](mailto:george.wisker@po.state.ct.us).

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# Summer 1999 Hypoxia Report

Previous issues of Sound Outlook (June 1999, October 1999) have reported that DEP conducts a Summer Hypoxia Survey as part of the broader Long Island Sound (LIS) Ambient Water Quality Monitoring Program. The Survey provides a description of the extent and duration of low dissolved oxygen concentrations (hypoxia) for the summer months since 1991. Through this monitoring effort DEP has found that the duration and severity of hypoxia varies from year to year.

In the summer of 1999, low dissolved oxygen intensity and duration were less severe than the 1998 season. In 1999, the area affected by low dissolved oxygen was 314 square kilometers (see Figure 1), the third smallest since 1990. The onset of hypoxia took place about July 2, 1999 and lasted approximately 50 days until August 21, 1999. This was the fifth longest duration observed since 1990 (see Figure 2). The testing stations located in the

Narrows and Western Basin recorded hypoxic conditions during this period (see map below).

LIS water temperature averaged 1°C warmer in 1999 than in 1998, which was 2°C warmer than in 1997. The mild winter of 1998-1999 contributed to warmer surface and bottom waters in LIS. Because the normally cooler bottom waters were warmer than usual, there was less of a temperature difference between top and bottom waters which allowed mixing between these water layers to occur earlier than expected.

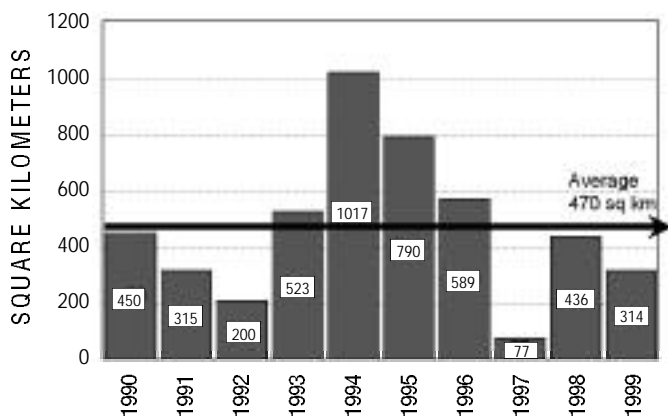
The summer of 1999 was also one of the driest on record. June, July and August rainfall was well below the 30-year average. This lack of rainfall greatly reduced the amount of atmospheric and nonpoint source nitrogen loads from stormwater runoff to LIS. Combined with nearly a 20% reduction in nitrogen loads from sewage treatment plants and industry since 1990, there was less nitro-

gen entering LIS that would normally fuel phytoplankton production. The dry weather and lower nitrogen loads undoubtedly contributed to the lower than expected algae bloom in LIS and less hypoxia, despite warmer conditions that might otherwise be favorable to forming a hypoxic event.

Several weather conditions also contributed to the early end of hypoxia. During late August, winds picked up and cooler air moved into the region, causing surface to bottom water mixing. A record 13.12- inches of rainfall in September from tropical systems Dennis and Floyd fell in a matter of a few weeks. It is unknown at this time what impact, if any, this heavy inflow of fresh water may have had on benthic dwelling organisms in the Western Sound.

To receive a copy of the LIS water quality summer monitoring program fact sheet please contact Mark Parker, DEP, Bureau of Water Management, at (860) 424-3276 or by e-mail at [mark.parker@po.state.ct.us](mailto:mark.parker@po.state.ct.us).

Figure 1 - Maximum area of Long Island Sound during summer hypoxic events with DO concentrations less than 3.0 mg/l



LIS Water Quality Monitoring  
Summer Hypoxia Survey – August 2-5, 1999

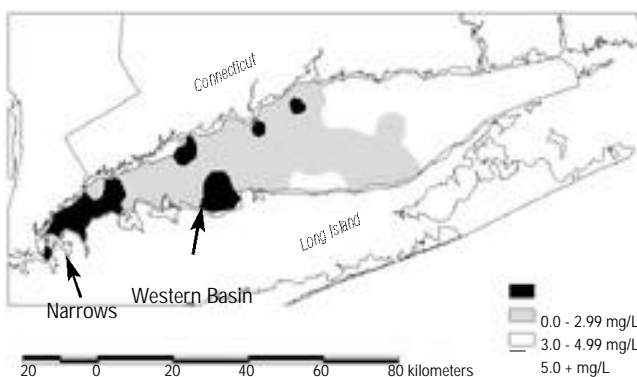
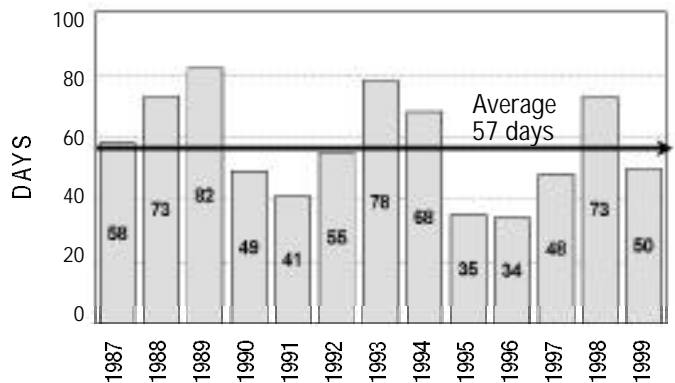


Figure 2 - Durational estimates of summer hypoxic conditions in Long Island Sound, 1987-1999



## What is the TMDL?

Correcting the low dissolved oxygen, or “hypoxia” problem in Long Island Sound requires a long-term commitment throughout the drainage basin to remove more than half the nitrogen that presently enters LIS each year. Nitrogen fuels the growth of phytoplankton in this estuary. When phytoplankton dies and sinks to the bottom of the Sound, it decays, consuming oxygen in the process and causing hypoxia.

For everyone who has an interest in protecting and preserving the Sound, the “commitment” to reduce nitrogen loads has to be more than voluntary. The next step in the process of achieving

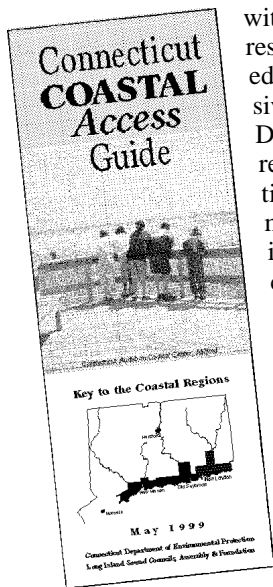
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# SPOTLIGHTED

## Coastal Access: Cove Island Park - Stamford

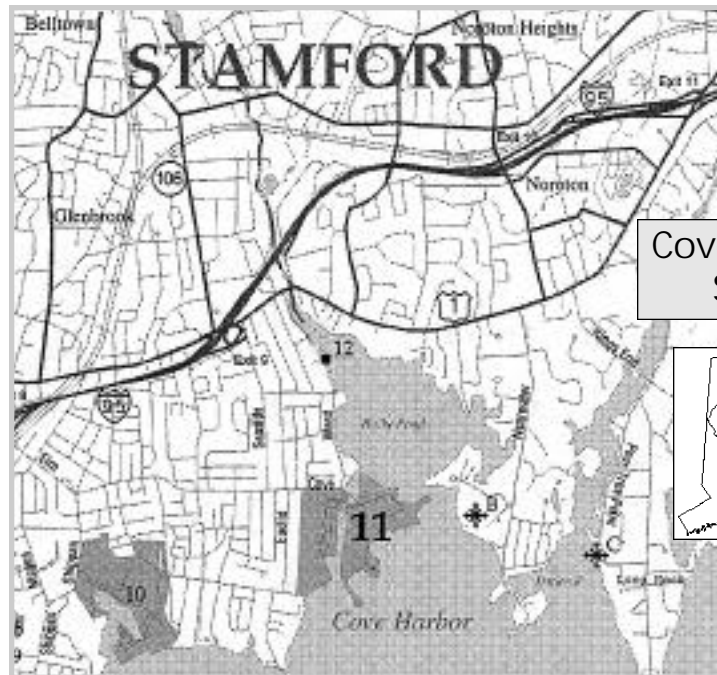
Looking for a break from your indoor winter weekend routine? Then pack a picnic lunch and your copy of the *Connecticut Coastal Access Guide* and head for Cove Island Park in Stamford (site #11 in the *Guide*) for an active day in the fresh maritime air.

Cove Island Park has it all—facilities supporting a variety of active upland recreational uses, and undeveloped areas

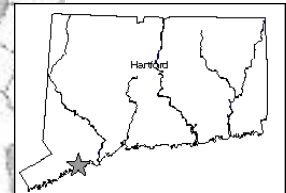


with diverse coastal resources well-suited for more passive enjoyment. Developed upland recreation facilities include a 1-mile loop walking/running trail, children's play area, a roller blade/cycling path and expansive lawn areas for kite-flying and Frisbee toss. Mother Nature provides her own amenities:

two sandy beaches offer the perfect venue for strolling and beach-



Cove Island Park  
Stamford



coastal resources are provided

combing; a small salt marsh, intertidal mudflats and the estuarine embayments of Holly Pond and the Cove River provide opportunities for birders to observe returning migratory waterfowl and shore birds; rocky shoreline and a small bluff offer excellent viewpoints for the more casual observer and places for anglers to try their luck. Cultural enthusiasts can see the historic 18<sup>th</sup> century Bush-Holly House, currently closed for restoration and renovation. It is scheduled to open to the public in the fall of 2000 as the Community Center for Environmental Education, a state-of-the-art environmental interpretation center.

Detailed descriptions of the site's

along the Park's recently completed Long Island Sound Interpretive Habitat Trail funded by DEP's Long Island Sound License Plate Program. Twelve interpretive signs along the trail describe the site's natural and cultural history and explain natural resource management issues facing Long Island Sound.

Consider Cove Island Park, one of Connecticut's most beautiful municipal coastal parks, as an alternative winter weekend activity. Admission and on-site parking are available to the public with no charge until Memorial Day. For free copies of the *Connecticut Coastal Access Guide*, call the DEP at (860) 424-3034 or email [coastal.access@po.state.ct.us](mailto:coastal.access@po.state.ct.us).

### What is the TMDL? *(continued)*

planned reductions is the establishment of a Total Maximum Daily Load analysis or "TMDL." The federal Clean Water Act requires states to develop a TMDL and submit this analysis to the U.S. Environmental Protection Agency (EPA) for approval when water quality standards are not being met. In the case of LIS, the need to meet dissolved oxygen standards requires additional efforts to control nitrogen, and the nitrogen TMDL sets out a plan to meet nitrogen reduction goals.

Connecticut and New York have jointly released the nitrogen TMDL for public comment. The TMDL calls for reducing the present-day nitrogen load from the two states from 48 thousand tons per year to 24 thousand tons per year — about a 50% overall reduction. Primary sources targeted for control are municipal sewage treatment plant discharges, which are rich in nitrogen. The target date for a 64% reduction of nitrogen from these "point" sources is 2014. Connecticut has over 80 point sources identified for nitrogen control.

Nitrogen runs off the land during rainfall events and enters LIS

through streams and rivers. Auto and power plant emissions also contain nitrogen which is carried via rainfall into surface and groundwater sources and into LIS. These "nonpoint" sources are much more difficult to control. A 10% nitrogen reduction in runoff from urban and agricultural lands is specified in the TMDL.

Once the TMDL is revised based on comments received from the public, adopted by the State, and approved by the EPA, the states will begin formalizing the program by re-issuing permits to dischargers to further limit the amount of nitrogen in their effluent. Connecticut and New York have already reduced statewide point source loads by more than 15% since 1990, in advance of the formal schedule that the TMDL will provide. When the nitrogen TMDL is met in 2014, it is expected that oxygen levels will sustain healthy and diverse aquatic life in LIS throughout the year.

For more information, contact Paul Stacey, DEP, Bureau of Water Management, at (860) 424-3020 or at [paul.stacey@po.state.ct.us](mailto:paul.stacey@po.state.ct.us). Or, visit the DEP web site at <http://dep.state.ct.us> and the U.S. EPA Long Island Sound Study web site at <http://www.epa.gov/region01/eco/lis/>.

## Putting Your LIS Plate Money to Work: Abandoned Trolley Track Becomes Footbridge to Coastal Area

Imagine yourself walking along a footbridge, leaning over the rope railings, looking at the water rushing beneath you and exclaiming in amazement at the breathtaking scenery. Are you in some exotic locale? In fact, you are enjoying a new public access area in Branford, Connecticut (site # 137 on the *Connecticut Coastal Access Guide*)! The Long Island Sound Fund provided a \$25,000 grant to the Town of Branford to construct a 480 foot long by 4 foot wide footbridge in the footprint of an abandoned historic trolley track to enhance the site's coastal public access. The bridge extends a popular existing nature walk along the abandoned trolley line, and provides a stunning view of a tidal marsh, Branford Harbor, and the Thimble Islands.

Visitors to the Branford Trolley Track Footbridge can expect to see numerous shorebirds in the tidal estuary, feeding in the marsh or wading in the shallow waters of the tidal creek. This marsh area also provides habitat for many fish, mammals and invertebrates and is an ideal location for a weekend hike.



Purchase of an LIS License Plate supports the LIS Fund

As of DECEMBER 31, 1999:

- Plates sold: 98,888
- Funds raised: Over \$3.3 million
- Projects funded: 161
- Public access projects funded: 38

The LIS Fund supports projects benefiting Long Island Sound in the categories of habitat restoration, public access, education and outreach, and research.

For information on ordering a Long Island Sound license plate, call 1-800-CT-SOUND.



*Branford Trolley Track Footbridge*

The trail is approximately 1 mile long, extending into a beautiful forested area.

Originally constructed in 1907, the trolley track was a crumbling structure in severe disrepair which, though dangerous, continued to attract hundreds of hikers and birdwatchers each year. Thanks to the tremendous volunteer and community efforts of many Branford residents, and the LIS Fund Grant, the project became a reality in April of 1998 when the bridge was finished and opened to the public in a formal ribbon-cutting ceremony.

Crossing a tidal marsh and creek in the Stony Creek area of Branford, the footbridge connects Juniper Point and Pleasant Point. It is a low-profile concrete walkway with two benches in the middle, allowing visitors to rest and enjoy the scenic vistas extending out into Long Island Sound.

Please see "Look Out for Upcoming Events," for information on LIS Fund grant deadlines. For more information about the program, please contact the Long Island Sound Fund Coordinator, Kate Hughes, at (860) 424-3034, by email at [kate.hughes@po.state.ct.us](mailto:kate.hughes@po.state.ct.us), or visit our website at <http://dep.state.ct.us/olisp/licplate/licplate.htm>.

## LOOK OUT for upcoming events!!

**March 13-17:** Marine & Estuarine Shallow Water Science & Management Conference, Atlantic City, New Jersey. Contact Ralph J. Spagnolo, EPA, Region III, (215) 814-2718 for more information.

**March 17: 5:00 p.m.** Deadline for LIS License Plate grant applications to be received in hand. Contact Kate Hughes, DEP, Office of Long Island Sound Programs, (860) 424-3034 for more information.

**Late March:** Ospreys return to Connecticut.

**March 31:** Long Island Sound Educators Conference, Norwalk, CT. Contact Kim Raccio, The Maritime Aquarium at Norwalk, (203) 852-0700, ext. 245 for more information.

**April 1:** "Marine Reserve Concept: Making it Work for the Sound" Conference, New York Botanical Garden, Bronx, New York. Contact Robin Kriesberg, Save the Sound, 1-888-SAVELIS for more information.

**April 22:** Earth Day

**May 26:** Long Island Sound Day

**May & June:** Bluefish return to LIS.

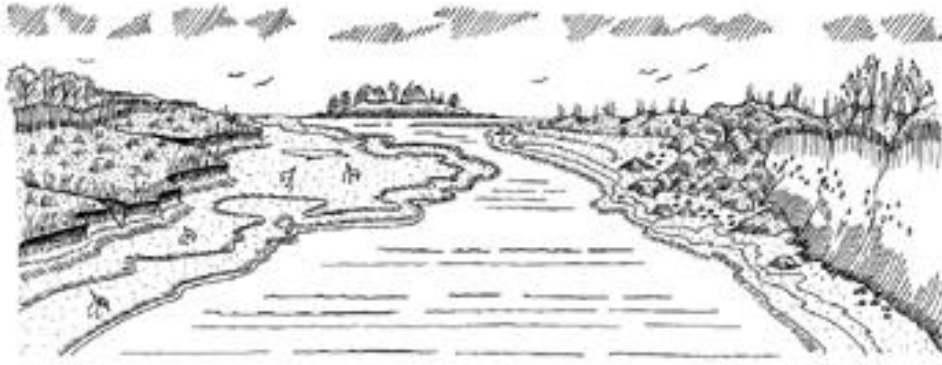
**Please be sure to check the Calendar of Events listed in DEP's website:** <http://dep.state.ct.us>

This year marks the **20<sup>th</sup> Anniversary of Connecticut's Coastal Management Program** and the **15<sup>th</sup> Anniversary of the Long Island Sound Study National Estuary Program**. Please stay tuned for upcoming events.

If you did not receive this issue of Sound Outlook in the mail and would like to be placed on the mailing list, please fill out below and mail to: Sound Outlook, CT DEP, Office of LIS Programs, 79 Elm Street, Hartford, CT 06106-5127; or e-mail your address to [laurie.makowski@po.state.ct.us](mailto:laurie.makowski@po.state.ct.us).

Name: \_\_\_\_\_  
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# SPOTLIGHTED Coastal Resource: A Definition



*With the year 2000 marking 20 years of successful coastal management in Connecticut, it seemed appropriate to define the entire range of coastal resources identified in the Connecticut Coastal Management Act. Look for some of these resources to be spotlighted in future issues of Sound Outlook.*

**Beaches and dunes:** include barrier beaches, tombolos (a sand or gravel bar connecting an island with the mainland or another island), pocket beaches, and related dunes and sandflats.

**Bluffs and escarpments:** naturally eroding shorelands marked by dynamic sea cliffs.

**Coastal hazard areas:** land areas that may be inundated or eroded during coastal storm events.

**Coastal and estuarine waters:** have a salt concentration of at least five hundred parts per million. They include "Nearshore Waters" which lie between mean high water and the approximate ten meter depth contour; "Offshore Waters" which lie seaward of that contour; and "Estuarine Embayments," such as tidal rivers, bays, lagoons and coves, in which sea water is diluted by fresh water.

**Developed shorefront:** highly engineered harbor areas.

**Freshwater wetlands and water-courses:** submerged lands along the coast that have poorly drained, riverine or flood plain soils, as well as rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps and bogs.

**Intertidal flats:** gently sloping or flat areas located between high and low tide lines which are composed of muddy, silty and fine sandy sediments, and little or no vegetation.

**Islands:** lands surrounded by water.

**Rocky shorefront:** shore areas composed of bedrock, boulders and cobbles that are highly erosion-resistant.

**Shellfish concentration areas:** actual, potential or historic areas in coastal waters in which shellfish are found.

**Shorelands:** coastal upland areas such as bedrock hills, till hills and drumlins.

\* **Tidal wetlands:** areas which border on or lie beneath tidal waters, or which were formerly connected to tidal waters, and which are capable of growing certain wetland plants. The coastal salt marsh is a characteristic tidal wetland.

**Water-dependent uses:** recreational, commercial and industrial uses and facilities which require direct access to, or location in, marine or tidal waters, including marinas, boatyards, marine transportation facilities, and general public access.

\* See *Sound Outlook*, June 1999

## Staffer Receives Governor's 1999 Customer Service Award

Governor John G. Rowland honored David Kozak, an Environmental Analyst III in DEP's Office of Long Island Sound Programs at a ceremony on November 15, 1999, for his continued excellence in customer service and job performance. Kozak played a key role in creating the *Connecticut Coastal Access Guide* which has been distributed to over 25,000 interested individuals. "Dave Kozak's hard work has provided a useful tool to those looking to experience the beauty of Connecticut's scenic coastline," said DEP Commissioner Arthur J. Rocque, Jr. "His continued efforts with municipal officials and the public ensures a lasting partnership between the state's coastal communities and the Department." Congratulations, Dave!

## Sound Tips

While it's still too cold to get to the beach, do the next best thing and take a child to a coastal learning center in your area. Taking the time to introduce a young person in your life to the value and importance of LIS and its coastal resources is one of the best ways to help the Sound.

Mystic Aquarium/Institute for Exploration—Mystic, CT.  
Call the Aquarium at (860) 572-5955, or visit their website at <http://www.mysticaquarium.org/> for more information.

Mystic Aquarium Education Center—Hartford, CT. Call the Center at (860) 543-8464, or visit their website at <http://www.mysticaquarium.org/main.cfm?ID=16> for more information.

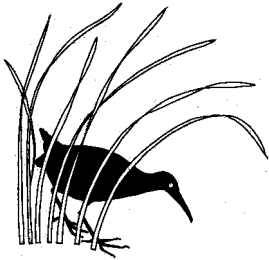
The Maritime Aquarium at Norwalk—Norwalk, CT. Call the Maritime Aquarium at (203) 852-0700, or visit their website at <http://www.maritimeaquarium.org/> for more information.

"How's the Water" will return in the June 2000 issue of *Sound Outlook*.



Connecticut Department of  
Environmental Protection  
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Hartford, CT 06106-5127

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## Connecticut Celebrates 20 Years of Successful Coastal Management

The year 2000 marks the 20<sup>th</sup> anniversary of Connecticut's Coastal Management Program, and the Department will begin a year-long celebration of this milestone. Since the Connecticut Coastal Management Program's inception in 1980, it has been a pioneer on a national level in its efforts to balance protection and management of coastal resources and in the implementation of fully coordinated coastal resource based decision-making at all levels of government. The program has also led the way in the restoration of tidal wetlands, the use of geographic information systems as a tool to enhance the efficiency of coastal regulatory programs, and in the designation of the lower Connecticut River as "Wetlands of International Importance" under the Ramsar Convention.

DEP's Office of Long Island Sound Programs administers the coastal management program which is approved by NOAA (National Oceanic and Atmospheric Administration) under the federal Coastal Zone Management Act.

"Striking the balance between coastal communities' economic development and the need to protect and preserve the State's coastal natural resources is a difficult task, and one the Department has done successfully for the past 20 years," said DEP Commissioner Arthur J. Rocque, Jr. "As the former Director of our State's coastal management program, I not only reflect with pleasure at the past successes of these programs, but look towards continual programmatic improvements into the next millennium."



Visit the DEP website at <http://dep.state.ct.us>

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DEP's Office of Long Island Sound Programs will soon be offering training to municipal planning and zoning officials in conducting coastal site plan review. Workshops will be scheduled by the municipal liaison for your community. Please call (860) 424-3034 for more information.