UPDATED ASSESSMENT AND STRATEGY OF THE CONNECTICUT COASTAL MANAGEMENT PROGRAM

Prepared Pursuant to the Coastal Zone Enhancement Grants Program

SECTION 309
COASTAL ZONE MANAGEMENT ACT

Prepared by the
Connecticut Department of Environmental Protection
Office of Long Island Sound Programs

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TABLE OF CONTENTS

CONNECTICUT'S COASTAL MANAGEMENT PROGRAM: AN UPDATED ASSESSMENT AND STRATEGIES

I. INTRODUCTION

The Connecticut Department of Environmental Protection is pleased to provide this update of the State's 2006 Assessment and Strategy for its coastal area management program with regard to the nine areas of potential enhancement identified by the Federal Coastal Zone Management Act (CZMA). The so-called "309" enhancement areas are: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management planning, ocean and Great Lakes resources, energy and government facility siting, and aquaculture. This document includes an assessment of each of the nine enhancement areas as they apply to Connecticut and identifies the relative importance of each area in consideration of the state's approved coastal management program, existing conditions, and anticipated program changes and implementation activities eligible for funding under section 309.

The Connecticut Coastal Management Act (CMA), effectuated in 1980, is the centerpiece of the State's comprehensive coastal resource management program, building upon existing authorities as well as providing additional ones. Responsibility for implementing the CMA is shared by state and municipal levels of government. In addition to providing the basic structures for Connecticut's coastal management program, the CMA delineates a coastal management boundary, contains statutory policies, standards and procedures which implement the program, and defines management responsibilities for agencies at all affected levels of government. Most significantly, the CMA established over 50 specific policies and standards regarding the state's coastal resources and uses, to be applied to all development by each level of government with cognizance over such activities within the coastal area.

The Department of Environmental Protection Office of Long Island Sound Programs (OLISP) is the organization directly responsible for implementation and enforcement of Connecticut's coastal management program. OLISP regulates all work in tidal wetlands and in tidal, coastal and navigable waters, and monitors and/or certifies for consistency purposes, as appropriate, all state and federal actions subject to our approved coastal management program. In addition, OLISP oversees and assures compliance of municipal implementation of CMA-mandated coastal site plan review requirements for all activities subject to local planning and zoning regulations.

Over the past thirty years of implementation of the state's coastal program, Connecticut has successfully preserved, protected and in fact restored critical coastal resources and has promoted water-dependent waterfront development, including significant public access to coastal waters. We have continually refined our organizational structure, our legal and programmatic guidance, and strengthened our network of related programs to enhance our capabilities of achieving our most basic dual purposes - resource protection and promotion of water-dependent uses. Perhaps most importantly, through the day to day implementation of our core program we have institutionalized the basic premises of the federal CZMA and state CMA.

This Assessment and Strategy continues to reflect the status of Connecticut's Coastal Management Program as an established, mature institution. The planning and regulatory statutes, programs, and policies needed to address the State's most salient coastal management problems already exist and are being successfully maintained. With the exception of additional attention to coastal and marine spatial

planning, there is no recognized need for any major new initiatives that would constitute an eligible program change under section 309. Accordingly, our assessment identifies our need to refine existing programs to help better achieve coastal management objectives, and lay the groundwork for future initiatives through data collection, analysis, and dissemination. Additionally, we believe significant benefits can accrue through additional outreach and education efforts in the enhancement areas.

Therefore, as in our 1992, 1996, 2001, and 2006 assessments, we have identified no major gaps in our programs to address the enhancement areas. We have, however, identified several areas where, were funding available, we could add to, improve and refine the ways in which we address each enhancement area. The three categories of coastal hazards, cumulative and secondary impacts, and Ocean and Great Lakes resources, individually and together, cover a number of significant overlapping issues, and incorporate elements of other categories. Thus, these three have been designated as high priority enhancement areas. Because Connecticut has been fortunate in avoiding major coastal storms and has strong coastal management policies addressing hazards, this area had been a medium priority in the last assessment. At this point, while we remain subject to the devastation of coastal hazards, there is now an increased understanding of the threats posed by climate change to coastal resources and uses. Observed and anticipated increases in sea level in Long Island Sound can exacerbate existing storm threats and create new challenges. Cumulative and secondary impacts continue to be a consistent high priority for an established program such as Connecticut's, as we must constantly evolve our approach to complex and interrelated issues associated with Long Island Sound resources and uses. For example, the management of dredging and dredged sediments affects not only resources and habitats, but also navigation and the viability of maritime commerce and water-dependent uses. Ocean issues remain a high priority as reflected in the new National Ocean Policy, established by Executive Order of the President and building on the previous work of the Pew and U.S. Oceans Commissions. National-level initiatives have highlighted the concept of coastal and marine spatial planning to better manage use and resource conflicts in offshore waters, and Long Island Sound needs to be incorporated into this management framework so that Connecticut's coastal and estuarine resources and uses can be preserved and enhanced. Thus, the enhancement areas identified as of highest priority are those that include the greatest number of potential program and related changes requiring the greatest additional staff and financial resources to accomplish.

The four enhancement areas of medium priority are wetlands, public access, energy and government facilities, and aquaculture. While public access remains a vital issue, new programmatic initiatives under section 309 are unlikely to fill major programmatic gaps. At this point, our primary public access need is for significant additional funding to acquire and manage access sites. Energy and government facility siting, while potentially of great importance, has been designated a medium priority only in contrast to the previous assessment, in which several large-scale, high profile energy infrastructure projects were addressed. At this time, there are no pending or anticipated challenges on the order of the Broadwater LNG facility or the Islander East gas pipeline. Aquaculture is an important industry in Connecticut, and faces a number of emerging issues as the industry expands. Statutory changes have underlined the need to develop new administrative mechanisms to coordinate coastal management concerns with other federal and state agency processes.

Our remaining low priority enhancement areas are marine debris and special area management plans (SAMPs). Except for particular instances of derelict vessels, marine debris has not been a significant issue in Connecticut. In the SAMP area, experience with the "formal" Connecticut River SAMP has led to the emergence of a variety of "informal" SAMPs in response to resource coordination and management issues in particular areas.

II. SUMMARY OF PAST 309 EFFORTS

The following list contains 309 projects undertaken since the 2001 Assessment. Additional information on efforts in the high priority categories is presented in the Enhancement Area Analysis (Section III) for the respective category.

Public Access

- Medium priority in last Assessment; no 309 projects undertaken.

Coastal Hazards

- Medium priority in last Assessment; no 309 projects undertaken.

Ocean Resources

- Seafloor Mapping
- Submerged Lands Management Proposal.

Coastal Wetlands

- Research on high tide line elevation for tide-gated marshes.

Cumulative and Secondary Impacts

- Dredged Material Management Plan
- Conducted workshops and developed Area—Specific Use Standards for Residential Docks.
- Developed and obtained Office of Ocean and Coastal Resource Management (OCRM) approval for minor program changes to Connecticut's coastal management program
- Participated in national Coastal Zone Management Performance Measurement System.

Marine Debris

- Low Priority in Last Assessment

Special Area Management Planning

- Low Priority in Last Assessment.

Energy & Government Facility Siting

- Seafloor Mapping
- Submerged Lands Management Proposal.

Aquaculture

- Produced guidance document on coordinated aquaculture permitting, in conjunction with the state Department of Agriculture, Bureau of Aquaculture.
- Developed general permit for aquaculture activities

III. ENHANCEMENT AREA ANALYSIS

Wetlands

Sections 309 Enhancement Objective
Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetland

Resource Characterization
Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. Please indicate the extent, status, and trends of wetlands in the coastal zone using the following table:

Wetlands type	**Estimated historic extent** (acres)	**Current Extent** (acres)	**Trends in acres lost since 2006** (net acres gained & lost)	**Acres gained through voluntary mechanisms since 2006**	**Acres gained through mitigation since 2006**	**Year and source(s) of Date**
Tidal (Great Lakes) Vegetated[1]	ca 1900: 22,265 to 26,500 ac	~17,608ac calc in 1995 from aerial photos	lost = 618.24sf gained = 540sf	130.17ac of tidal wetlands restored from 2006 - 2010	1538.5sf saved thru mitigation	OLISP permit and habitat restoration records1
Tidal (Great lakes) non-vegetated	these are not tracked					
Non-tidal/ freshwater	No reliable historic data exists for inland wetland extent	153,720 acres remain; a 40-50% the estimated loss from the pre-settlement	Average per-mitted losses ~120-130 ac/ year. This is offset by minor gains in wet-lands	unknown	unknown	1992 Wetlands of Connecticut[2]

1 Tidal wetlands acreage was calculated in 1995-1996 and we've stuck with that figure, since subsequent gains/losses have been on the order of square feet. It is important to note that tidal wetland restoration projects improve the habitat quality of degraded wetlands and thus do not "add" wetlands area, since the sites are counted as tidal wetlands both before and after the restoration.

		total reported in Wetlands of CT	restored			
Submerged Aquatic Vegetation LIS Eelgrass (*Zostera marina*)	Unknown, but eelgrass is documented from all CT coastal towns	East of CT River only 1995-629ac 2002-1389ac 2006-1668ac 2009-1,980ac	Net gain in acres of eelgrass in every survey since 1995	6.9 more acres gained by removal of a STP discharge pipe in 1989: 75.2ac in 2006 82.1 ac in 2009	unknown	2002[3], 2006[4], and 2009 eelgrass survey reports
Connecticut River SAV	Unknown, but much more extensive than it is today	1300 acres based upon 1994-95 mapping	unknown	unknown	unknown	Lower CT River SAV study from early 1990s
Publicly Acquired Tidal Wetlands	n/a	n/a	None sold that I am aware of	7 sites totaling 53.7 acres [5]	n/a	DEP files

[1] Tidal wetland trends are from 1/2006 to 1/2010, when we switched to a new database that does not have the ability to report on some of these tidal wetland/permit statistics; Minimally impacted= 20087.8sf or 0.46ac

[2] http://www.ct.gov/dep/lib/dep/water_inland/wetlands/wetlands_of_ct.pdf

[3] http://library.fws.gov/Wetlands/eelgrass_report_v2.pdf

[4] http://library.fws.gov/Wetlands/eelgrass_report_2006.pdf

[5] Goss, Magee Ave, Crowley 1, Madison Landing, Guilford-Seaside, CT River Gateway, Eagle Landing SP

2. If information is not available to fill in the above table, provide a qualitative description of information requested, including wetlands status and trends, based on the best available information.

OLISP collects quantitative information for most cells in the above table. We will be refining our data retrieval and management methodology to conform to the wetlands indicators requirements of the National Coastal Management Performance Measurement System.

3. Provide a brief explanation for trends.

Trends indicate that CTDEP is maintaining the very low annual loss of tidal wetlands. Many gains are not true gains in area, however. Degraded tidal wetlands, formerly connected tidal wetlands, etc, are still already counted in the total acreage of the state's network of tidal wetlands. Although they are not gains in area, what we are gaining is a marked improvement in the functions and values of the restored marshes, as opposed to the services they provided for wildlife prior to their restoration. Tidal Wetland acres are truly gained when fill is removed from upland areas to restore the wetlands that were buried decades earlier.

4. Indentify ongoing or planned efforts to develop monitoring programs or quantitative measures for this enhancement area.

CTDEP and our partners in tidal marsh restoration continue to monitor for a wide array of parameters including marsh elevation changes, soil & water chemistry, Phragmites cover, native marsh grass cover, fish use, bird use, and invertebrate use. As stated above, we are in the process of adapting our tidal wetlands data to conform to the parameters of National Coastal Management Performance Measurement System. We are also analyzing the capability of tidal marshes to expand into areas that are currently undeveloped, flat or gently sloped uplands. Sea level rise will tend to push marshes landward and we are developing a plan to protect these low-lying uplands from future development.

5. Use the following table to characterize direct and indirect threats to coastal wetlands, both natural and man-made. If necessary, additional narrative can be provided below to describe threats.

Type of threat	**Severity of impacts** (H,M,L)	**Geographic scope of impacts** (extensive or limited)	**Irreversibility** (H,M,L)
Development/Fill	H	limited	L
Alteration of Hydrology	H	extensive	L
Erosion	H	limited	M-H
Pollution	H	limited	M
Channelization	H	limited	M
Nuisance or exotic species	H	both	M-H
Freshwater input	H	limited	M
Sea level rise	H	extensive	H
Boating	M	limited	M
Sudden Wetland Dieback	L-M	limited	L
Global Climate Change	H	extensive	H

Data in the table above represent new occurrences. Severity of impacts will vary greatly from one instance to the next. All could potentially result in severe impacts. Historic occurrences tend to have a much higher irreversibility.

Alteration of Hydrology:
For the most part, these are activities that took place prior to the passage of the Tidal Wetlands Act that cause the draining or flooding of embayments and the degradation of tidal wetlands. Hydromodifications are assigned an extensive geographic scope because blocking the tidal connection to one marsh impacts the entire marsh – potentially hundreds of acres in size. Where they occur, they cause adverse changes in wetland functions and value. Several former millponds remain whose obsolete water control structures still function to this day, preserving the impoundments created long ago. This act of impounding water in tidal embayments tends to

compress tidal wetlands in horizontal and vertical space, effectively creating bathtub rings of emergent wetland. Irreversibility is low because corrective actions can be taken to fix the problem and reverse the degradation process – though this can get very expensive. To date, Connecticut has restored tidal flow to over 2175 acres of degraded tidal wetland. New activities are likely in violation of the Coastal Management Act and/or Tidal Wetlands Act, and therefore will be reversed via enforcement action. Hydromodifications that would cause adverse impacts to tidal wetlands are not permitted. This problem is decreasing as wetlands are restored. There are some diked and drained marshes that cannot be restored as restoration would flood low-lying developments.

Pollution:
Pollution, specifically nitrogen enrichment, has an adverse impact upon submerged aquatic vegetation especially eelgrass (*Zostera marina*) in Long Island Sound (LIS). As reported previously, the absence of eelgrass throughout much of the Sound is likely due to nitrogen enrichment from sewage treatment plants (STPs). Eastern LIS was surveyed in 1993-1994 for eelgrass by boat/diver methodology to create maps of both observed eelgrass beds, and "potential" eelgrass beds. These potential beds are within areas that could or should support eelgrass based on extrapolation of data collected and compared to bathymetry maps and other historic records of documented eelgrass beds. These areas remained classified as "potential" because the small research team could not survey all of eastern LIS by boat.

Eelgrass was remapped in 2002, during the previous reporting period, by aerial survey and photointerpretation that showed a major expansion in the open waters of Fishers Island Sound and easternmost LIS. There have been no changes in nitrogen status in this region and so it appears that the 1993/94 survey was conducted during a period of low productivity and may indicate a climate-induced decline in the aerial extent of eelgrass. Eelgrass was mapped again, twice during the current reporting period (2006 and 2009), following the same methodology as the 2002 survey. Results show an overall increase in eelgrass from 2002-2006, and a minor decrease in eelgrass from 2006-2009.

Beds in embayments continue to decline, most likely due to STPs and nonpoint source nitrogen enrichment. Restoration of nearly 50 acres of eelgrass has occurred in Mumford Cove in Groton where the STP discharge had been removed in 1987. Eelgrass appears to be decreasing in embayments. Efforts to ameliorate hypoxia by reducing nitrogen inputs to the Sound may someday lead to a natural expansion. Connecticut is conducting a number of investigations to understand the specific causes of eelgrass declines in embayments and then formulate a plan for restoration. Additional research will be needed to determine the causes of declines.

Nuisance or Exotic Species:
As reported previously, the primary invasive species that threatens brackish and fresh tidal wetlands is common reed (*Phragmites australis*), and it has now been established that it is an invasive haplotype from Europe. The reduction of salinity and sulfides in diked and drained marshes creates ideal habitat for invasion by this grass. *Phragmites* continues to expand throughout the coast at a rate faster than DEP can control it. Monitoring is suggesting that even with successive years of herbicide application, which does not eradicate this grass, control efforts may last but a mere 10 or so years. DEP is experimenting with several new pesticide products. Impediments to control include limited funds and staff.

As reported previously, water chestnut (*Trapa natans*) has been discovered in Hartford area non-tidal and tidal waters. New and mostly small colonies have been located between Hartford and Hamburg Cove, Lyme, in the Connecticut River. All control areas show decreasing coverage by water chestnut and in a few sites it appears no further harvesting will be necessary.

Freshwater Input:
Connecticut has long recognized that a common development practice is to collect stormwater and discharge that water at specific points to tidal wetlands and estuarine waters. This can radically alter the amount of water that enters wetlands and embayments, increase the delivery of sediments to wetlands and allow for the delivery of first-flush pollutants. Dilution of soil salinity in a tidal wetland or deposition of sediments or both from stormwater can promote the spread of the invasive plant common reed (*Phragmites australis*). While the irreversibility is in the medium range, these impacts are often avoided through the requirements of best management practices and the retention of the runoff from a 1-inch rainfall event.

Sea Level Rise:
As reported previously there is a gradual but progressive loss (multi-decadal change) of low marsh habitat in western Long Island Sound where the tidal range is greatest. These losses occur within specific reaches of sub-estuaries and the likely cause is accelerated sea level rise. Current sea level rise estimates based upon the rate of ice melt around the globe suggest that tidal wetlands are a threatened resource. CT DEP and several non-governmental organization (NGO) partners are investigating the best way to identify upland parcels of land to which tidal wetlands can migrate as sea level rises. The program will help identify key upland parcels for acquisition, protecting the land from development until the tides and wetlands overtake the parcels.

Boating:
The level of recreational boating activity in Connecticut is high, with much of the activity taking place in inshore areas, including coastal embayments and the Connecticut River estuary, where tidal wetlands, submerged aquatic vegetation (SAV) and associated resources are abundant. As a result, there is increased potential for recreational boating traffic by motor boats, jet skis, canoes and kayaks to impact these resources and habitats. For instance, motor boating through SAV can damage beds and starting a jet ski in SAV can create “blowouts.” Excessive boat speed through narrow wetland channels can erode wetland banks and in some areas in the lower Connecticut River region, threaten state-listed endangered plant species inhabiting intertidal flats. All boating activities can disturb nesting birds such as osprey or in the case of islands and beaches, colonial nesting birds such as terns and egrets. There have been no funds for monitoring and so trends cannot be reported and specific areas cannot be targeted for protection or restoration. The best approach may be the development of educational materials and training programs for boaters focusing on environmentally safe boating practices.

Sudden Wetland Dieback:
The phenomenon known as sudden wetland dieback (aka Sudden Vegetation Dieback, or SVD) has been identified throughout southern New England and appears to have properties similar to brown marsh in Louisiana and diebacks in Georgia. All of these diebacks are associated with a drought. The first dieback was described from panhandle Florida in 1990 followed by Louisiana in 2000, and Georgia, South Carolina and Cape Cod in 2002. The same pattern of vegetation loss appears to be present in Connecticut and it appears to have occurred in 1999. A pathologist in

Louisiana attributes the diebacks to a pathogen affecting *Spartina*, a fungus of the genus *Fusarium*. A pathologist at the CT Agricultural Experiment Station has completed a study on *Fusarium* in some of CT's tidal marshes. Samples were taken from both SVD and healthy sites. The data suggest that *Fusarium* alone is probably not the cause of SVD, but could interact with other stressors, such as drought and presence of a specific type of nematode, to result in plant death. The experience in other states is that some but not all of the dieback areas recover. Transplants into dieback areas survive. The greatest impediment is the lack of research funds to determine the cause of dieback and assess whether this will be a recurring phenomenon and the extent to which natural restoration will occur. The model developed for Louisiana marshes does not explain diebacks on the Atlantic Coast. Most areas in CT where dieback had occurred have fully to almost fully recovered since the 2006 309 report was submitted. Another theory into the cause of sudden wetland dieback is a large population of nocturnal crabs of the genus *Sesarma*. Research performed in CT at some dieback and control sites failed to show a population of *Sesarma* large enough to have any impact on the marsh vegetation.

Global Climate Change:
Models are forecasting the reduction of snowfall over the next 25 years for low altitude New England. There is the potential for this to have an impact upon the timing and duration of the spring freshet on major rivers, especially the Connecticut River, home to fresh-tidal and brackish wetlands designated as "Wetlands of International Importance." Changes in hydrologic patterns in estuarine rivers may allow the salt wedge to migrate further upstream, which may change the biophysical character of these wetlands. This type of change in hydrology might make some of the wetlands more vulnerable to invasion by common reed. In order to document trends in the future, funding will be required to establish monitoring sites and install recording salinity gages, perhaps as a component of LISICOS as discussed in the Oceans section of this Assessment.

Scientific studies in southern New England demonstrate that production of eelgrass (*Zostera marina*) declines at the higher temperatures recorded in coastal waters. Elevated temperature in combination with nitrogen enrichment promotes significant levels of mortality. Long-term temperature data for Long Island Sound show that there has been an increase in water temperature due to climate change.

6. (CM) Indicate whether the Coastal Management Program (CMP) has a mapped inventory of the following habitat types in the coastal zone and the approximate time since it was developed or significantly updated.

Habitat Type	CMP has mapped inventory (Y or N)	Date complete or substantially updated
Tidal (Great Lake) Wetlands	Y	Completed in mid-1990s
Beach and Dune	Y	In progress
Nearshore (several)	Y	Most completed in late 1990s-early 2000s
SAV	Y	Updated every 3+/- years; 2009 is latest

7. (CM) Use the table below to report information related coastal habitat restoration and protection. The purpose of this contextual measure is to describe trends in the restoration and protection of coastal habitat conducted by the State using non-CZM funds or non

Coastal and Estuarine Land Conservation Program (CELCP) funds. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

Contextual measure	Cumulative acres for 2004-2010
Number of acres of coastal habitat restored using non-CZM or non-Coastal and Estuarine Land Conservation Program (CELCP) funds	739.4 acres of coastal habitat restored
Number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds	445.8 acres of coastal habitat protected

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for enhancement objective.

1. **For each of the wetland management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Wetland regulatory program implementations, policies, and standards	Y	Y
Wetland protection policies and standards	Y	N
Wetland assessment methodologies (health, function, extent)	Y	N
Wetland restoration or enhancement programs	Y	N
Wetland policies related public infrastructure funding	Y	N
Wetland mitigation programs and policies	Y	N
Wetland creation programs and policies	Y	N
Wetland acquisition programs	Y	N
Wetland mapping, GIS, and tracking systems	Y	N
Special Area Management Plans	Y	N
Wetland research and monitoring	Y	N
Wetland education and outreach	Y	N
Other (please specify)		

2. **For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.**
   - **a) Characterize significant changes since the last assessment;**
   - **b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and**

c) Characterize the outcomes and effectiveness of the changes.

Wetland regulatory program implementations, policies, and standards

a) The coastal permitting program has been "streamlined" to expedite application review time, as well as to close applications inconsistent with the Tidal Wetlands Act and the Coastal Management Act; CT legislature has also passed a law directing DEP to take steps to expedite the permit application review process.
b) This was not a 309/CZM driven effort.
c) This effort streamlined the permit review timeframe.

3. (CM) Indicate whether the CMP has a habitat restoration plan for the following coastal habitats and the approximate time since the plan was developed or significantly updated.

Habitat type	CMP has a restoration plan (Y or N)	Date completed or substantially updated
Tidal (Great Lake) Wetlands	Y	September 2006
Beach and Dune	Y	September 2006
Nearshore	Y	September 2006
Other (please specify)	Y	September 2006

CTDEP's habitat restoration program has adopted the Comprehensive Conservation Management Plan of the EPA Long Island Sound Study (LISS) National Estuary Program. The LISS recognizes 12 high-priority coastal habitat types for restoration and protection, including both tidal wetlands and beaches & dunes, in addition to 10 more – most of which could be considered "nearshore." These include: Submerged Aquatic Vegetation, Intertidal Flats, Estuarine Embayments, Rocky Intertidal Zones, Cliffs and Bluffs, Coastal Grasslands, Coastal and Island Forests, Freshwater (non-tidal) Wetlands, Shellfish Reefs, and Riverine Migratory Corridors (reconnecting miles of streams to spawning habitat for anadromous species of fish by removing barriers to migration such as dams).

New goals were established by the LISS Policy Committee in September 2006 in a Memorandum of Understanding (MOU). The goals of this MOU commit the habitat restoration partners to:

- Work together to restore or protect an additional 300 acres of coastal habitat and open up an additional 50 miles of riverine migratory corridor to diadromous fish from January 1, 2006 to December 31, 2011, as stated in EPA's Strategic Plan, and ultimately restore 2,000 acres by 2020;
- Use partnerships to accomplish restoration objectives and leverage limited local, state, and federal funds.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the Coastal Management Program and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	**Select type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H, M, L)
There are no priority needs or major gaps that could be addressed through a 309 Strategy.	n/a	n/a

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone including, but not limited to, CZMA funding)?

High _____
Medium ___X___
Low _____

Briefly explain the level of priority given for this enhancement area.

The necessary work effort or strategy would not likely result in a "program change" and therefore is not appropriate for 309 funding.

2. Will CMP develop one or more strategies for the enhancement area?

Yes _____
No ___X___

Briefly explain why a strategy will or will not be developed for this enhancement area.

The wetlands assessment identifies a number of significant threats for which no specific 309 strategy is proposed herein. The main reason for the absence of these strategies, and for the designation of wetlands as a medium priority, is that the appropriate work effort or strategy would not likely result in a "program change" and therefore is not appropriate for 309 funding. Nevertheless, OLISP is networking with other programs or has identified alternative funding sources to address those issues. For instance, DEP will be installing approximately 60 tidal marsh benchmarks across the coast to record surface elevation changes in marshes. This will provide an index regarding marsh response to sea level rise. Research is underway in regards to wetland submergence, sudden wetland dieback, and eelgrass declines for example, by researchers at UConn, Yale, and the CT Agricultural Experiment Station.

Coastal Hazards

Section 309 Enhancement Objective

Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard area, managing development in other hazard areas anticipating and managing the effects of potential sea level rise and Great Lakes level change.

Resource Characterization

Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. Characterize the level of risk in the coastal zone from the following coastal hazards: (Risk is defined as: "the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage." Understanding Your Risk: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001)

Type of hazard	**General level of risk** (H, M, L)	**Geographic Scope of Risk** (Coast-wide, Sub-region)
Flooding	H	CW
Coastal storms, including associated storm surge	H	CW
Geological hazards (e.g., tsunamis, earthquakes)	L	CW
Shoreline erosion (including bluff and dune erosion	H	SR*
Sea level rise and other climate change impacts	M	CW
Great Lake level change and other climate change impacts	N/A	N/A
Land subsidence	L	CW
Other (please specify)	N/A	N/A

* The risk is greater on sandy beaches than on rocky shorefronts. Sandy beaches compose approximately 8% of CT's coastline (88/1065 miles).

2. For hazards identified as high level of risk, please explain why it is considered a high level risk. For example, has a risk assessment been conducted, either through the State or Territory Hazard Mitigation Plan or elsewhere?

Flooding

Connecticut's current Natural Hazard Mitigation Plan (NHMP) for 2007-2010 was adopted to meet Federal Emergency Management Agency (FEMA) guidelines set forth in the Disaster Mitigation Act of 2000 and is currently being revised for 2010-2013. The HNHMP represents the State of Connecticut's efforts to approach mitigating the effects of natural disasters on a multi-hazard basis, and shifts from a disaster-response driven system to one based on effective hazard mitigation planning. The plan indicates that the threat of natural hazards is generally similar throughout the state, including the coastal area. The highest threat identified in that plan is flooding.

Coastal Storms

The NHMP identifies that high wind events (including hurricanes), and winter storms (including nor-easters) are the second and third highest threat throughout the state respectively.

Shoreline Erosion

Connecticut's Coastal Management Act identifies natural shoreline erosion as necessary to preserve the dynamic form and integrity of natural beach systems. Coastal uses must be compatible with the capabilities of this natural system so as not to interfere with the natural processes of erosion and sedimentation. However, the growing demand for protection of private property from these natural processes puts increased pressure on local and state regulatory agencies each year to allow flood and erosion control structures which do not meet the criteria of the Act. Inappropriate or poorly designed seawalls, riprap, and other similar assemblages may at best defer erosion to down-drift or neighboring areas, or at worst potentially exacerbate erosion at a site. Such structures are increasingly being built without state or local authorization, stressing the already over-burdened enforcement programs in this state. In addition to this empirical evidence, recent publications[1] assert that as much as 80% of the CT shoreline will be armored in some fashion. http://risingsea.net/ERL/CT.html

3. If the level of risk or state of knowledge of risk for any of these hazards has changed since the last assessment, please explain.

Sea Level Rise has been downgraded from "High" to "Medium" based on the definition of risk and the understanding that this hazard will not pose a high risk *during this assessment period*. However, long range planning still must be done to ensure that as the risk from this hazard grows as it is expected to do, this state's level of preparedness is adequate to meet the challenge.

4. Identify any ongoing or planned efforts to develop quantitative measures of risk for these hazards.

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[1] Titus, J.G., D.E. Hudgens, D.L. Trescott, M. Craghan, W.H. Nuckols, C.H. Hershner, J. M. Kassakian, C.J. Linn, P.G. Merritt, T.M. McCue, J.F. O'Connell, J. Tanski, and J. Wang. 2009. State and Local Governments Plan for Development of Most Land Vulnerable to Rising Sea Level along the U.S. Atlantic Coast, *Environmental Research Letters* 4 044008. (doi: 10.1088/1748-9326/4/4/044008).

CT DEP, in partnership with the NOAA Coastal Services Center and the University of Connecticut Marine Sciences Department, hosted a Coastal Management Fellow during 2007-2009 to develop a Coastal Hazards website and Sea Level Rise Visualization Tool. The web site serves as a source of organized data and information relative to coastal hazards in CT, and the visualization tool provides an interactive mapping environment to allow users to see the potential impacts of various increments of sea-level rise scenarios. CT DEP is planning to update and revise the content of the hazards related information, and to consolidate the current website within the Agency's web presence to make it logically more accessible. Further, as more information on the likely measure of sea-level rise inundation for LIS becomes available, CT DEP will re-run and update the inundation scenarios to more accurately quantify the probable extent and impact of these changes.

CT DEP is also part of FEMA's continuation of the Flood Map Modernization program known as RiskMap. Whereas the Flood Map Modernization was geared towards creating digital versions of the familiar floodmaps, RiskMap's goal is to encourage beneficial partnerships and innovative uses of flood hazard and risk assessment data in order to maximize flood loss reduction. CT DEP is currently developing a state business plan to guide future RiskMap activities.

5. (CM) - Use the table below to identify the number of communities in the coastal zone that have a mapped inventory of areas affected by the following coastal hazards. If data *are* not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

Type of hazard	Number of communities that have a mapped inventory	Data completed or substantially updated
Flooding	36	Y
Storm surge	36	Y
Geological hazards (including Earthquakes, tsunamis)	0	N
Shoreline erosion (including bluff and dune erosion)	36	N
Sea level rise	36	Y
Great lake level fluctuation	N/A	N/A
Land subsidence	0	N
Other (please specify)	N/A	N/A

Geological hazards (including Earthquakes, tsunamis) & Land subsidence: Given the low level of risk, CT does not have any plans to develop mapping data for these categories beyond evaluating any relevant data that might be made available.

Shoreline erosion (including bluff and dune erosion): While CT has some data for this hazard; it is ~30 years old and in need of updating. CT DEP is developing a strategy to address this in concert with other coastal hazard related issues.

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

Management categories	**Employed by state/territory** (Y or N)	**Significant changes since last assessment** (Y or N)
Building setbacks/restrictions	Y	N
Methodologies for determining setbacks	Y	N
Repair/rebuilding restrictions	Y	N
Restriction of hard shoreline protection structures	Y	N
Promotion of alternative shoreline stabilization methodologies	Y	N
Renovation of shoreline protection structures	N	N
Beach/dune protection (other than setbacks)	N	N
Permit compliance	Y	N
Sediment management plans	N	N
Repetitive flood loss policies, (e.g., relocation, buyouts)	Y	N
Local hazards mitigation planning	Y	N
Local post-disaster redevelopment plans	N	N
Real estate sales disclosure requirements	N	N
Restrictions on publicly funded infrastructure	Y	N
Climate change planning and adaptation strategies	Y	Y
Special Area Management Plans	N	N
Hazards research and monitoring	Y	y
Hazards education and outreach	Y	N
Other (please specify)		

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

a) Characterize significant changes since the last assessment;

b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and

c) Characterize the outcomes and effectiveness of the changes.

Climate change planning and adaptation strategies

In 2009 and 2010, substantial efforts have been made towards climate change planning in CT with an eye on what climate adaptation efforts could and should be put forth for state and community implementation. The Governor formed a Steering Committee for Climate Change, with Adaptation Subcommittees analyzing the categories of Public Health, Natural Resources, Infrastructure and Agriculture. http://ctclimatechange.com/index.php/ct-happenings/gsc-adaptation-subcommittee/ . Multiple OLISP staff sit on these committees which developed in depth impact reports in these planning areas and are currently developing recommendations for the CT legislature. OLISP started an internal climate change group to examine the State's coastal policies and procedures with respect to climate change adaptation and will make formal recommendations to the Steering Committee for the report to the legislature. CT is also updating its Natural Hazard Mitigation Plan for FEMA, and DEP included climate change hazards in the plan for the first time. OLISP staff has been attending and speaking at many events, workshops and conferences on climate change adaptation and strategies, which have begun to inform communities and allow OLISP to start to cherry-pick effective strategies. In addition, OLISP has received multiple grants from EPA's Climate Ready Estuary Program and Long Island Sound Study in 2009 and 2010 to fund the development of a Sentinel Monitoring for Climate Change Strategy for Long Island Sound along with New York and federal partners.

OLISP is developing a long term monitoring strategy to keep informed about what climate change impacts are occurring in the coastal ecoregions and how Connecticut can adapt to those changes through sound management. Other CRE projects include the Groton Coastal Climate Change Adaptation project, a series of workshops co-led by ICLEI-Local Governments for Sustainability and OLISP that brought together federal, state and local government as well as other stakeholders to explore the adaptation planning process for a coastal community. This led to another upcoming grant to share the lessons learned from this planning process with other communities, by developing the Adaptation Resource Toolkit. Through the meetings and planning processes from all of the above, CT is on the leading edge of developing feasible adaptation strategies. The Groton workshops fueled some exciting dialogue and work on all levels of government. One result was DEP's development of a vulnerability assessment for all the coastal state parks. As the planning and dialogue continue, more adaptation strategies will be discussed and developed, hopefully leading to buy-in and ultimate implementation.

Hazards research and monitoring (non-CZM funding)

With the NOAA Coastal Fellowship Project and through association with regional governance bodies (Northeast Regional Ocean Council) and ocean observation groups, (Northeast Regional Association of Coastal and Ocean Observation Systems), OLISP has completed or advanced several tasks identified in the 2006 Assessment & Strategy relative to coastal hazards research and monitoring. These include:

- Acquiring, processing, and making available high-accuracy digital elevation data (LiDAR) for the coastline of CT that serve as a base for sea-level rise scenarios
- Developing several inundation scenarios based on likely flooding elevations and time scenarios.
- Integrating various coastal hazard documents and information into a web site to centralize the source of coastal hazards content.
- Assisting UCONN Marine Science staff in developing a prototype Southern New England Storm Surge inundation visualization tool.

These changes have led to advancement in the capacity of both DEP and others to address and plan for sea level rise inundation. For example, the data and methods used to create the coastal inundation scenarios were used in the Groton Coastal Climate Change Adaptation workshops during a series of case study sessions evaluating the risk of doing nothing vs. several adaptation measures. DEP Parks Division is using several of the inundation scenarios in a state wide coastal park vulnerability assessment, and the Infrastructure Working Group of the Governor's Steering Committee on Climate change has used examples from the inundation scenarios as examples in their draft report.

3. (CM) Use the appropriate table below to report the number of communities in the coastal zone that use setbacks, buffers, or land use policies to direct development away from areas vulnerable to coastal hazards. If data *are* not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

For CMPs that use numerical based setback or buffers to direct development away from hazardous areas report the following:

Contextual measure	Number of communities
Number of communities in the coastal zone required by state law or policy to implement setback, buffers, or other land use policies to direct development away from hazardous areas.	0
Number of communities in the coastal zone that have setback, buffer or other land use policies to direct develop away from hazardous areas that are more stringent than state mandated standards or that have policies where no state standards exist.	0

For CMPs that do not use state-established numerical setbacks or buffers to direct development away from hazardous areas, report the following:

Contextual measure	Number of communities
Number of communities in the coastal zone that are required to develop and implement land use policies to direct development away from hazardous areas that are approved by the state through local comprehensive management plans.	40 (all coastal towns)
Number of communities that have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas.	0

No communities are required by state law to develop and implement specific setback, buffers, or other land use policies to direct development away from hazardous areas. All coastal communities in Connecticut, however, are required to implement the coastal hazards policies of the state Coastal Management Act in their planning and zoning decisions. In addition, all coastal communities also participate in the National Flood Insurance Program, and seven of the coastal communities participate in an enhanced program which has more stringent requirements than the minimum standards provided for by the Federal Emergency Management Agency. This program

involves the areas of Public Information, Mapping and Regulation, Flood Damage Reduction, and Flood Preparedness. Overall, the minimum standards of the Flood Insurance Program provide for restriction in location and elevation of buildings within the coastal flood hazard areas. The State of Connecticut, Department of Environmental Protection is the State's designated National Flood Insurance Program (NFIP) coordinating agency. The DEP provides a "model ordinance," which serves as a guide for municipalities to develop regulations and ordinances for the coastal floodplain. In addition, towns are required to adopt local Plans of Conservation and Development that contain land use policies that meet or exceed the state standards set forth in the State Plan of Conservation and Development. However, since the state does not directly approve these plans, they cannot count as "approved state comprehensive management plans."

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Coastal Storm Event Readiness	Regulatory/Policy	H
Coastal Hazard Planning	Regulatory/Policy, data,	H

Coastal Storm Event Readiness

Significant coastal storms such as Nor'easters occur on a regular basis, causing a variety of damage to properties along the shoreline. In addition, Connecticut is overdue for a hurricane of a significant magnitude. If such a hurricane were to be predicted, in the days that precede this event, Connecticut's coastal regulatory program will likely be bombarded the requests for immediate repairs and shoring of structures that are in harm's way. In the days following a significant storm event, the coastal regulatory program will again be inundated with an overwhelming number of requests for repairs and removal of derelict structures. Non-responsiveness is not an option and there will be too many requests to provide sufficient service to all who are looking for answers. One option which would provide regulatory relief while preserving important coastal resources and policies is the development of a multi-faceted general permit to cover both pre- and post-storm needs. In addition to the development of the general permit, a policy for the issuance of emergency authorizations should be developed for those types of issues that will not fit into the general permit. Fact sheets would also be required to explain the process. Recommended statutory changes could be required in order to be completely responsive to anticipated needs. These options would enhance preparedness for more frequent storms as well as allow responsiveness to storm events.

Shoreline Change Guidance

To build on the concepts proposed in the last Assessment and Strategy and working with the latest understanding of climate change, Connecticut will continue efforts to address adaptation to shoreline

erosion and other changes that is consistent with State Natural Hazards Mitigation plan. As such, the following are a list of major gaps/needs:

- Given the level of risk associated with this hazard, its relevance to several management categories and lack of up-to-date data, CT's Coastal Management Program is in need of modern data describing the location, classification, and extent of current and historic shorelines and a summary of shoreline management strategies suitable for use in a planning or permitting situation. These data will directly enable OLISP to identify and quantify, in a consistent and defensible way not presently available, those areas of the coast that pose a significant risk due to erosion. As a result of this, these areas may require prioritization in terms of regulatory changes or recommendations for adaptive management options not presently at the forefront of the regulated community's mind, yet sufficient to protect reasonable property rights and demonstrate consistency with the Coastal Management Act. Further, it will provide a baseline inventory of location and type of man-made or armored shoreline to which future inventories can be compared in order to establish if management strategies are helping slow or prevent the hardening of CT's shoreline. At its core, addressing this will provide a better way to manage areas of erosion and protect private property in a more consistent way as intended by the Coastal Management Act.

- As the revised FEMA flood map information becomes adopted, OLISP may need to begin a corresponding process to revise the location of the Coastal Boundary. This would result in a change in the area of regulatory jurisdiction since any regulated activity conducted within the coastal boundary by a municipal agency such as plans of development, zoning regulations, municipal coastal programs and coastal site plan review must be conducted in a manner consistent with the requirements of the Connecticut Coastal Management Act (CMA; C.G.S. 22a-90 to 22a-113).

- As shoreline changes occur, particularly due to climate change, it will become more important to be able to identify the location of the high tide line which is the limit of the state's regulatory jurisdiction in areas other than tidal wetlands. The high tide line is defined by state statute as a line or mark left on tide flats, beaches or shore objects by the maximum height of a rising tide. The high tide line may be determined in four different ways identified by statute but the interpretation of those methodologies has been difficult at best, particularly in certain areas. With the occurrence of sea level rise, it is critical that this regulatory boundary be clear and unimpeachable.

- Effective outreach and communication are critical aspects to effective coastal hazards planning. More needs to be done to make the public aware of the existing resources and information that is or is planned to be available.

These strategies would result in enforceable policies and/or revised guidelines/policy documents.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

High ____X__
Medium _____
Low _____

Briefly explain the level of priority given for this enhancement area.

Coastal hazards is a high priority as the risk is great and the amount of data available to manage the risk and the tools for implementation is still lacking. With ever increasing pressure to protect property rights with structures that are inconsistent with the tenets of the Coastal Management Act, CTDEP must consider this as a priority need to help guide sound decisions. Additionally, the extent of the potential damage from coastal storms appears to be increasing, and OLISP will need to address this in order to effectively serve the regulated community in the post-storm period.

2. Will the CMP develop one or more strategies for this enhancement area?

Yes ___X_
No _____

Briefly explain why a strategy will or will not be developed for this enhancement area.

Strategies will be developed to address the above identified needs. Based on the identified needs, strategies will be developed to provide guidance on climate change adaptation to coastal municipalities and to promote severe storm preparedness and post-disaster response by OLISP's coastal regulatory program.

Public Access

Section 309 Enhancement Objective
Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

Resource Characterization
Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. Characterize threats and conflicts to creating and maintaining public access in the coastal zone:

Type of threat or conflict causing loss of access	Degree of threat (H,M,L)	Describe trends or provide other statistics to characterize the threat and	Type(s) of access affected
Private residential development (including conversion of public facilities to private)	H	1985-2002 Land cover change analysis for the area within CT's coastal boundary (160 mi^2) indicates significant (15%) change from undeveloped to developed land cover (mostly residential) is occurring east of New Haven with much lower rates of change to the west, due largely to the historically developed nature of CT's western coastal area. Few large (> 25 acres) undeveloped shoreline parcels remain (mostly along tidal rivers) for which significant development pressure will likely continue.	CT often gains legal public access using regulatory review processes applied to shoreline residential developments. However, there is no data describing the extent to which informal public use of privately owned shoreline existed prior to development. Formal public access sites have, in some cases, replaced previously informal, undeveloped access areas.
Non-water dependent commercial/industrial uses of waterfront (existing or conversion)	L	Waterfront industrial uses are gradually being replaced by residential uses	Conversion to residential use often creates new public access opportunities
Erosion	H	Erosion and sea-level rise exacerbate existing obstacles to lateral public access along the public beach where the mean high water elevation intersects with	Erosion typically restricts lateral shoreline access most significantly for areas directly fronting on Long Island Sound

		seawalls/bulkheads that obstruct dry access along the shoreline. As these structures are built/re-built, water levels rise and storms increase erosion of the public beach. The problem is expected to increase.	and less so within tidal rivers and embayments
Sea level rise	H	Sea level rise adversely affects lateral access along CT's public beaches as described above and is expected to complicate access to shoreline recreational areas where road access and parking areas are flooded during storm events.	Lateral access along the public beach and access to shoreline recreational facilities where access roads to these facilities are flooded during storms will be affected.
Natural disasters	NA	NA	NA
National security	L	Of the five military facilities on CT coastal waters, only the U.S. Coast Guard Academy allows limited public access. The U.S. Naval Sub Base at Groton, National Guard base (Camp Niantic) and 2 Coast Guard stations prohibit public access.	A small beach and fishing access areas at Camp Niantic popular with local residents have been eliminated since heightened security alerts were enacted
Encroachment on public land	L	Encroachments within the coastal area parks are not believed to impede coastal access. Encroachments within public ROWs ending at coastal waters create occasional access problems	Limited access to fishing and public viewing areas along tidal rivers is occasionally affected by encroachments
Other			

2. Are there new issues emerging in your state that are starting to affect public access or seem to have the potential to do so in the future?

Predicted sea level rise along Connecticut's coast is expected to create challenges to providing access to and maintaining facilities within Connecticut's coastal state parks and other significant state-owned recreational facilities (e.g., boat launches, wildlife management areas, water/fishing access sites, etc.). To gauge the extent of those effects and to prepare possible adaptation strategies, DEP-State Parks & Public Outreach Division is conducting a vulnerability assessment of publically accessible DEP coastal facilities (boat launches, state parks, natural reserves and wildlife areas). The assessment will study 2009 mean high water with 12", 24" and 36" sea level rises, evaluating the potential impacts to off-site road access, on-site roads and parking, on-site public and support facilities and site habitat inundation.

3. (CM) Use the table below to report the percent of the public that feels they have adequate access to the coast for recreation purposes, including the following. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

Contextual measure	**Survey data**
Number of people responding to survey on recreational access	368
Number of people surveyed that responded that public access to the coast for recreation is adequate or better	175
What type of survey was conducted (i.e. phone, mail, personal interview, etc)?	Web site based survey
What was the geographic coverage of the survey	Statewide
In what year was the survey conducted?	2010

4. Briefly characterize the demand for coastal public access within the coastal zone, and the process for periodically assessing public demand.

According to the above-cited 2010 survey, slightly less than half of those surveyed indicated that they are generally satisfied with the amount of public access opportunities available along Connecticut's coast while slightly more than half were either somewhat or very satisfied with the quality of existing coastal public access sites.1 Visitors to Connecticut's coastal State parks increased slightly since 2005 with several of these facilities at or near (parking area) capacity during fair-weather summer weekends. Other than periodic surveys of visitors to Connecticut's coastal access sites (two surveys have been conducted since 2004), the most common method for assessing public demand for shoreline access is derived from comments posted on CT's Coastal Access Guide (see *Contact Us* tab). Periodic updates to *Connecticut's Statewide Comprehensive Outdoor*

1 Due to a lack of resources, OLISP's coastal public access survey was entirely web-based, so that a response rate cannot be calculated. However, participation was actively solicited though direct e-mail contacts to interested parties, an article in the *Sound Outlook* newsletter, and an advertisement on the DEP's web site.

Recreation Plan provide another method for collecting information on Connecticut residents' coastal recreation habits and preferences. This plan, last updated in 2005, is scheduled to be updated again in 2010-2011 but it is unknown whether sufficient resources exist to conduct a comprehensive survey of the public's coastal public recreation habits and demand for coastal access facilities.

Coastal Shoreline State Park Summer Visitation

Visitor Type	2008-2009*	2005	Change #
Day Use	1,541,208	1,520,441	20,767
Camping	218,095	172860	45,235

*Average number of visitors in summer months (June-August) for 2008 and 2009 used to minimize effect of inclement weather in any one year on state park visitation

5. Please use the table below to provide data on public access availability. If information is not available, provide a qualitative description based on the best available information. If data is not available to report on the contextual measures, please also describe actions the CMP is taking to develop a mechanism to collect the requested data.

Types of public access	Current numbers	Change since last assessment (+/-)	Cite data source
(CM) Number of acres in the coastal zone that are available for public use (report both the total number of acres in the coastal zone and acres available for public access).	The area within CT's coastal zone (160 sq. miles) available for public use is unknown.	DNA[1]	Univ. of CT's CLEAR CALCAP project data.
(CM) Miles of shoreline available for public access (report both the total miles of shoreline and miles available for public access).	Approx. 328 out of 1065 total miles of coastal shoreline are held in a conservation-type form of ownership that could be open to public use[2].	No comparable data are available for 2010[2].	CT Shoreline Stats. Project.
Number of State/County/Local parks and number of acres.	115 (sites)	+6	CT coastal Access Guide

Number of public beach/shoreline access sites.	323	+66	CT Coastal Access Guide
Number of recreational boat access sites.	99	+4	CT Coastal Access Guide
Number of designated scenic vistas or overlook points	DNA[3]	DNA[3]	
Number of State or locally designated perpendicular rights-of-way.	DNA[1]	DNA[1]	
Number of fishing access points (i.e. piers, jetties).	172	+5	CT Coastal Access Guide
Number and miles of coastal trails/boardwalks.	DNA[4]	-	CT Coastal Access Guide
Number of dunes walkovers.	DNA[5]	DNA[5]	
Percent of access sites that are ADA compliant access.	50 %	-3%	CT Coastal Access Guide
Percent of total miles of public beaches with water quality monitoring and public closure notice programs.	100%[6]	Data not available for 2005.	U.S. EPA Beach Grant data set provided by local health districts and CT DEP to CT DPH
Average number of beach mile days closed due to water quality concerns.	133 annual average (2005-2009) closure days for 14.72 miles of beach resulting in 24.33 beach-mile days of closure	Unknown/not available[7].	U.S. EPA Beach Grant data set provided by local health districts and CT DEP to CT Dept. of Health

1. Data not available, except for the Town of Old Saybrook, which has established a ROW discovery program. A statewide compilation of coastal rights-of-way would require investigation of land records in each coastal town. As stated below, resources are not available to do this.
2. CT DEP collected shoreline ownership data in 2005. Although the type of ownership (protective vs. not-protective) indicates a strong indication of whether or not the shoreline is open and available for public use, such data are not

definitive as some publicly owned or private conservation land owners may not allow public use due to resource protection policies of the landowner.

3. Data not available. CT does not officially designate scenic vistas, but tracks only sites that provide on-site or physical access to coastal waters.
4. Data not currently available. Although CT has begun to collect data for the length of coastal trails and boardwalks, the data are incomplete and not reported here because it would under-report the actual miles of these types of access facilities. However, OLISP staff anticipates conducting personal surveys of coastal trails in Spring 2011 to compile the number of trail miles.
5. CT does not have dune walkovers along public roads as beaches in CT do not typically extend from mean high water to parallel public roads.
6. Includes all State and municipally-owned beaches in current reporting period (2005-2009). Beach association beaches are not required to participate; one association beach did participate in 2000-2008 but opted out in 2009 due to budget limitations (non-municipal/state beaches must contribute to the cost of beach monitoring).
7. Closures reported in 2005 did not include data for state beaches.

Management Characterization

Purpose: To determine the effectiveness of management efforts of address those problems described in the above section for the enhancement objective.

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

Management categories	**Employed by state/territory** (Y or N)	**Significant changes since last assessment** (Y or N)
Statutory, regulatory, or legal system changes that affect public access.	N	N
Acquisition programs or policies.	Y-CELCP and dedicated state land acquisition trust fund	N
Comprehensive access management planning (including GIS data or database).	Y	N
Operation and maintenance programs.	Y-State Parks	N
Alternative funding sources or techniques.	Y	N
Beach water quality monitoring and pollution source identification and remediation.	Y	N
Public access within waterfront redevelopment programs.	Y	N
Public access education and outreach.	Y	N

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

a) Characterize significant changes since the last assessment;

b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and

c) Characterize the outcomes and effectiveness of the changes.

There are no categories with significant changes.

3. Indicate if your state or territory has a printed public access guide or website. How current is the publication and/or how frequently is the website updated? Please list any regional or statewide public access guides or websites.

CT DEP maintains the *Connecticut Coastal Access Guide* through a cooperative agreement with the University of Connecticut who maintains the server for the website. The Guide is updated three to four times a year depending on the number of new sites added or changes to existing site information.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	**Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)**	**Level of priority** (H,M,L)
A rights-of-way (ROW) program is needed to identify public rights-of-way to coastal waters especially those obtained through coastal site plan review process. Only the Town of Old Saybrook has an active program to identify and develop ROWs terminating at coastal waters that might provide coastal public access (see 2005 A&S report for more on this municipality's initiative). That effort has continued with emphasis on program implementation over the past 5 years. Only one other coastal municipality had undertaken such a program which is currently dormant. No statewide	Data, training, legal assistance.	M

comprehensive program exists to assist these or other municipalities that may be interested in identifying and improving rights-of-way to provide access to coastal waters.		
Knowledge/interest in coastal resource based recreation. Despite increased information about coastal public recreation opportunities, use is concentrated in a few well-known developed state and municipal facilities (state parks and municipal beaches). When guided tours of less well known coastal access sites are publicized, demand increases substantially as demonstrated during National Trails Day outings	Enhanced outreach, education and communication about lesser known coastal recreation areas through guided hikes and car-top boat tours.	H
Car-top boating access facilities	A 2004 survey of public access facilities needs identified substantial need for additional car-top boating access facilities along discrete regions of CT's coast. This unmet demand is substantiated by periodic calls and other contact from the public using the CT Coastal Access Guide looking for places to paddle-powered boats.	H

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

High _____
Medium ___X___

Low _____

Briefly explain the level of priority given for this enhancement area.

Enhancing access to CT's coast has been a program priority for decades. Progress continues to be made through small incremental increases in access gained through municipal regulatory reviews of waterfront developments and occasional property acquisitions through federally-assisted land acquisition programs. Current and expected staffing that oversee these public access enhancement mechanisms will likely remain static for the foreseeable future thereby limiting future additional programmatic activity although changes in the focus of existing program priorities could change.

2. Will the CMP develop one or more strategies for this enhancement area?

Yes _____
No __X___

Briefly explain why a strategy will or will not be developed for this enhancement area.

While additional data would be helpful to further characterize the challenges to providing enhanced public access opportunities and perhaps identify additional access opportunities, such an effort would not lead to a program change. Staff limitations prevent the dedication of additional resources to develop a strategy for this area given higher priority for other enhancement areas. Given the value of coastal real estate and the limited available funding, Section 309 resources are insufficient to acquire and manage additional coastal public access facilities. Connecticut will likely continue to use existing regulatory authorities that require permit applicants to provide such facilities as a condition of approval of proposed activities at waterfront site in order to ensure compliance with CCMA goals and policies to give highest priority and preference to water-dependent use of waterfront sites.

Marine Debris

Section 309 Enhancement Objective

Reduce marine debris entering the Nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris.

Resource Characterization

Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. In the table below, characterize the significance of marine/Great Lakes debris and its impact on the coastal zone.

Source of marine debris	**Extent of source** (H,M,L)	**Type of impact** (aesthetic, resource damage, user conflicts, other)	**Significant change since last assessment** (Y or N)
Land Based – Beach/Shore Litter	L	aesthetic	N
Land Based - Dumping	L	aesthetic	N
Land Based – Storm Drains and Runoff	L	aesthetic	N
Land Based – Fishing Related (e.g. fishing line, gear)	L	aesthetic, resource damage,	N
Ocean Based – Fishing (Derelict Fishing Gear)	L	resource damage	N
Ocean Based – Derelict Vessels	L	aesthetic	N
Ocean Based – Vessel Based (cruise ship, cargo ship, general vessel)	L	aesthetic	N
Hurricane/Storm	L	aesthetic	N

2. If information is not available to fill in the above table, provide a qualitative description of information requested, based on the best available information.

3. Provide a brief description of any significant changes in the above sources or emerging issues.

In our 2006 assessment, OLISP stated that marine debris was not a significant issue in our estuary and this is still the case. Litter control, recycling, and beverage bottle return programs and policies are developed and implemented by the Bureau of Materials Management and Compliance Assurance/Engineering and Enforcement Division/Source Reduction and Recycling Program of this Department, and there have been periodic legislative efforts to expand beverage bottle redemption. This effort was successful in 2009 with the enactment of Public Act No. 09-02, as amended by House Amendment Schedule "A", effective April 1, 2009 which provides for

expansion of the state's bottle bill to include water bottles. All containers for water and similar products as well as carbonated beverage containers sold in the state now have a refund value.

Lost fishing nets are not believed to be a significant issue in Connecticut coastal waters. However, the extent of impact from abandoned or lost lobster pots is unknown. Based on past experience with the fishery, the current Atlantic States Marine Fisheries Commission Lobster Management Plan allows for an annual loss of 10% of every license holder's gear. In 2003-2004 CT license holders reported fishing approximately 120,000 pots in the Sound. This would equate to 12,000 wire traps lost every year. Although some of this lost gear is eventually retrieved and reset, several thousand traps presumably remain lost on the bottom of the Sound. Each of these traps is required to have a biodegradable vent. State statute and regulations require that only licensed lobster fishers may handle lobster pots, so that any removal operation would have to be carried out by, or under the supervision of, these license holders barring a change in statute.

Derelict structures, derelict vessels and abandoned vessels may also contribute to the debris found in Long Island Sound. These structures include dilapidated docks, piers, floats, derelict vessels and abandoned vessels, but they are often overlooked unless they become the subject of local complaints. In 2006 state statutes were amended to provide additional guidance for local officials dealing with derelict and abandoned vessels. CGS Section 15-3a defines "derelict vessel" and 15-11a was amended for disposal of old vessels and floating structures. However, no comprehensive list of these structures and/or vessels is available.

4. Do you use beach clean-up data? If so, how do you use this information?

Connecticut's coastal management program does not conduct or monitor beach clean-ups. The private groups that conduct annual beach cleanup events continue to remove significant volumes of debris and floatable litter. The beach cleanup data is collected to develop a trend analysis that will measure the success of programs to reduce the introduction of floatables and other marine debris into Long Island Sound. The data on the number of participants in beach cleanup efforts is also used as one measure of public participation in protecting and restoring Long Island Sound. This information is published in the "Sound Health" reports of the Long Island Sound Study. http://longislandsoundstudy.net/wp-content/uploads/2010/02/section2.4_2008.pdf Save The Sound, an environmental advocacy group, which is now affiliated with the Connecticut Fund for the Environment, administers the annual International Coastal Cleanup (ICC) program in Connecticut. http://ctenvironment.org/beach-cleanups.cfm

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. For each of the management categories below, indicate if the approach is employed by the state of territory and if significant changes have occurred since the last assessment:

Management categories	**Employed by state/territory** (Y or N)	**Employed by local governments** (Y, N, Uncertain)	**Significant changes since last assessment** (Y or N)
Recycling requirements	Y	Y	N

Littering reduction programs	Y	Y	N
Wasteful packaging reduction programs	Y	N	N
Fishing gear management programs	N	N	N
Marine debris concerns in harbor, port, marine, & waste management plans	Y	Uncertain	N
Post-storm related debris programs or policies	Y	Y	N
Derelict vessel removal programs or policies	Y	Y	N
Research and monitoring	Y	N	N
Marine debris education & outreach	Y	N	N

Connecticut continues to implement and administer programs in effect since our 2006 assessment. Connecticut citizens participate in annual International Coastal Cleanup (ICC) efforts; existing CSO abatement programs continue to be implemented, as do strong state and local recycling and anti-littering programs and ordinances; the marine debris abatement practices identified in the DEP's marina best management practices manual continue to be incorporated as warranted into municipal harbor management plans and as conditions of state authorizations for marina facilities; stormwater general permits for marina facilities continue to be administered; a technical guidance document titled The Connecticut Stormwater Quality Manual in 2004 (http://www.dep.state.ct.us/wtr/stormwater/strmwtrman.htm). OLISP staff participated in the production and review of this manual, which identifies floatable debris as an important issue.

In addition to these on-going efforts, the Clean Marina and Clean Boater Programs identified in the 2006 assessment continue to be implemented. These programs have developed into effective education and outreach campaigns designed to educate marina operators and boaters about the environmental impacts of marina and boat operations, and to provide practical solutions, including strategies to reduce marine debris. The Clean Marina Program instructs boating facilities operators to better manage their solid waste as well as their stormwater runoff from hull maintenance areas. As part of the these programs, OLISP and the DEP Boating Division have developed guidance documents that address waste containment and disposal at boating facilities and on boats. The documents include best management practices for the reduction, containment, and disposal of solid waste, including fish waste and hazardous waste. Strategies for managing solid waste have been discussed during workshops for boating facility operators. In addition, an outreach campaign directly targeting recreational boaters has encouraged them to properly dispose of their trash, recyclables, and fish waste. The portion of the Clean Marina Guidebook dealing specifically with marine debris can be found at: http://www.ct.gov/dep/lib/dep/long_island_sound/clean_marina/clean_marina_pdfs/facility_management_pdfs/litter_and_recycling_08.pdf. The Clean Boater Program information can be found at: http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323526&depNav_GID=1620

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

a) Characterize significant changes since the last assessment;

b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and

c) Characterize the outcomes and effectiveness of the changes.

There are no categories with significant changes.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H.M,L)
Knowledge of the extent and significance of derelict structures, vessels and lost or abandoned lobster pots.	Policy, data	L

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

High _____
Medium _____
Low X___

Briefly explain the level of priority given for this enhancement area.

While marine debris continues to be of concern, it is not an area requiring enhancements and therefore ranks as a low priority.

2. Will the CMP develop one or more strategies for this enhancement area?

Yes _____
No ___X___

Briefly explain why a strategy will or will not be developed for this enhancement area.

Connecticut successfully implements several management tools through existing programs, in spite of the fact that marine debris is a relatively minor pollution problem in the state. For example, an outreach component regarding marine debris has been incorporated into the Clean Marina Program and Clean Boater Program developed to address coastal water quality issues. In addition, marine debris issues resulting from storms are addressed under the Coastal Hazards enhancement area. A distinct gap does exist in our knowledge of the extent and significance of derelict structures, vessels and lost or abandoned lobster pots in Connecticut coastal waters. While Marine Debris as a category continues to be a low priority with respect to section 309 enhancement needs, the planning for derelict vessel, debris, and ghost lobster pot removal is an area of management interest, and OLISP will continue to evaluate whether survey and removal projects may now be funded through NOAA's Community-based Marine Debris Prevention and Removal Project Grants or other sources.

Cumulative and Secondary Impacts

Section 309 Enhancement Objective
Develop and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources.

Resource Characterization
Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. Identify areas in the coastal zone where rapid growth or changes in land use require improved management of cumulative and secondary impacts (CSI) since the last assessment. Provide the following information for each area:

Geographic area	**Type of growth or change in land use**	**Rate of growth or change in land use** (% change, average acres converted, H,M,L)	**Type of CSI**
Coast-wide working waterfronts.	Change from water-dependent upland uses to other types of use such as residential.[1]	N/A	Loss of maritime infrastructure and water-dependent uses in coastal areas.
Coastal Flood Hazard Area Statewide	Continued development pressure (both new and re-development) within coastal hazard areas. Increasing pressure for seawalls and other shoreline armoring in the face of sea level rise.		Shoreline vulnerability from effects of climate change and sea level rise. Resource vulnerability (tidal wetlands) from shoreline armoring.
Coastal Municipalities	Change in land cover to "developed."	From 2002 to 2006, the greatest percentage of land cover change to the "developed" classification was 0.9 percent in East Lyme; other coastal	Potential impacts to coastal resources including tidal wetlands, beaches and dunes, and coastal waters from construction, repair, maintenance activities and onsite wastewater treatment systems.

		municipalities experienced between 0% change (Lyme) to 0.7% change (Ledyard and West Haven). All towns remained in the percentage categories identified for the previous assessment (30 – 50% developed and 50-86% developed)	
Coastal ports and harbors	Loss of maritime infrastructure and water-dependent uses in coastal areas caused by restrictions on use of existing dredged material disposal sites in Long Island Sound.	Increasing use of interstate consistency review by NY Dept. of State (DOS) will make open water disposal more difficult at some in-water disposal sites, as the Central and Western disposal sites are scheduled to close	Potential adverse impacts to water-dependent uses from limited capacity to accommodate dredged material.

1. There is insufficient dredged material placement capacity to accommodate maintenance and new dredging to support water dependent uses. Due to the lack of readily available in-water disposal sites the need to increase opportunities for beneficial reuse of dredged material has become even more important. Other issues affecting working waterfronts are: the inability to dredge due to lack of funds, difficulty retaining and attracting maritime uses, especially shipping, and economically stressed cities seeking to convert waterfront into more lucrative uses.

2. Identify sensitive resources in the coastal zone (e.g., wetlands, waterbodies, fish and wildlife habitats, critical habitat for threatened and endangered species) that require a greater degree of protection from the cumulative or secondary impacts of growth and development. If necessary, additional narrative can be provided below to describe threats.

Sensitive resources	**CSI threats description**	**Level of threat** (H,M,L)
Coastal Flood Hazard Area	Potential increased impacts to life and property from Climate Change/Sea Level	H

	Rise	
Coastal Waters and Tidal Wetlands	Continued nonpoint source pollution-related threats from stormwater, onsite wastewater treatment systems, marinas and recreational boating	H
Beaches	Erosion loss due to shoreline armoring	M

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. **For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment**:

Management Categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Regulations	Y	Y
Policies	Y	N
Guidance	Y	Y
Management Plans	Y	Y
Research, assessment, monitoring	Y	Y
Mapping	Y	Y
Education and Outreach	Y	Y
Other (please specify)	N	N/A

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

a) Characterize significant changes since the last assessment;

b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and

c) Characterize the outcomes and effectiveness of the changes.

Regulations

(Section 309) OLISP is continuing with a project to develop and implement state-level dock regulations, which will complement efforts to promote dock management through local harbor management plans. OLISP is moving forward with the formal process of promulgating dock regulations. The draft regulation proposal has been distributed and explained to a group of key stakeholders that has been established to assist in developing the regulations. DEP accepted comments from the stakeholder group through December 2009 and updated the draft regulations in accordance with the feedback received. A revised draft of regulations is underway.

(Section 306) OLISP has made significant procedural improvements to our permit application review process by implementing "LEAN." LEAN is a set of process improvement methods that identify and eliminate waste, standardize workflow, reduce backlogs, and decrease process complexity. Through a "kaizen" event in June 2008, permit staff began identifying places where waste was evident and where the process could be improved. Several revisions were made which resulted in significant process improvement. The number and complexity of steps were reduced. After providing training to the regulated community on the new process, the changes were implemented in two phases on November 1, 2008 and January 1, 2009. Early returns on the process changes are showing marked improvements. For example, the initial review letter prior to the new process was sent out in 205 days (on average). The initial letter is now sent out in less than 30 days. The average processing time from start to finish was 566 days and this has been reduced to less than 100 days. Also, the OLISP permit backlog (pending applications) has been reduced by more than 25% since November 1, 2008.

Policies

No significant changes in the policies and standards contained in the Connecticut Coastal Management Act (CCMA, Connecticut General Statutes §§22a-90 through 22a-113j) have occurred since the 2005 Assessment and Strategy.

Guidance

(Section 306) OLISP has developed a series of brochures to provide guidance and information on a variety of coastal management-related subjects. The brochures are designed to answer general questions and provide basic information. The brochures available in the series to date include:

- Connecticut's Coastal Management Program
- Connecticut's Coastal Permit Program
- Residential Dock Guidelines
- Connecticut's Aquaculture Permitting Process
- Connecticut's Coastal habitat Restoration Programs
- Connecticut's Coastal Nonpoint Source Pollution Control Program

Coastal Services Center Coastal Management Fellowship, 2005-2007: Terry Yasuko Ogawa, from the University of Michigan, worked with OLISP to develop techniques to assess the visual impact of proposed development on scenic resources and landscape qualities of Connecticut's coast. The Visual Impact/Visual Assessment (VIVA) project sought to develop legally defensible language about visual impacts and tools to manage the coastal landscape. Phase one of the project entailed research of theory and practice of visual impact assessment. In phase two, a GIS-based program, checklists, and worksheets were created to be used by state permit staff members and municipal land use agencies to implement visual resource policies. The Landscape Protection and Visual Impacts Fact Sheet developed as a result of this fellowship can be found in the Coastal Management Manual at http://www.ct.gov/dep/lib/dep/long_island_sound/coastal_management_manual/manual_section_2_08.pdf

Coastal Services Center Coastal Management Fellowship, 2007-2009: Joel Johnson, from the University of Maine and nominated by Maine Sea Grant, worked with OLISP to develop a

coastal hazard plan for Connecticut. The goal of the Coastal Hazards Analysis and Management Program (CHAMP) project was to develop a coastal hazard plan for Connecticut by assessing current science, data, and policy, developing a hazards data website and visualization tool, and developing and implementing an outreach plan. Connecticut's erosion and flooding studies, storm history, population growth and development, topography and bathymetry, and other coastal hazards-related information were researched and assembled into a "state of knowledge" report. That report was parsed into content for a coastal hazards web portal that also showcases interactive coastal inundation maps.[1] The portal is available at: http://coastalhazards.uconn.edu/

Management Plans

(Section 309) Dredged Material Management Plan: The Final Rule published by EPA in June 2005 designating two open-water dredged material disposal sites in Long Island Sound required, among other things, development of a Dredged Material Management Plan (DMMP) for Long Island Sound. This effort is to be a collaborative undertaking over at least eight years between the Army Corps of Engineers, New England and New York Districts; EPA Regions 1 and 2; the States of Connecticut and New York, with the support of the corps North Atlantic Division. A Steering Committee composed of management staff from the collaborating agencies sets goals and provides oversight of the DMMP. A Project Delivery Team is developing the DMMP, while a Regional Dredging Team from those same agencies will evaluate proposed projects for disposal alternative feasibility. Development of the DMMP is an on-going task, and OLISP staff continued to participate on the Steering Committee and Product Delivery Team to implement the Project Management Plan, in the context of overall dredging issues as discussed in the Ocean Resources section.

(Section 309-related) OLISP is working with municipal harbor management commissions to revise local harbor management plans to incorporate dock standards and consider the visual impacts of docks and the scenic values of tidal wetland by minimizing fragmentation by walkways.

(Section 309 and 306) OLISP is working with the Long Island Sound Study's Stewardship Work Group to review methodologies for identifying properties with significant coastal resource conservation value in an effort to develop a management plan to encourage the States of Connecticut and New York to protect these properties. The geo-referenced database of coastal properties developed through the Coastal Land Assessment Methodology (CLAM) project, funded by a Section 309 grant, continues to be used to identify Connecticut's most significant remaining coastal land acquisition opportunities.

Research, assessment, monitoring

OLISP, administering the Long Island Sound License Plate Fund has awarded a number of research grants since the 2005 Assessment which are described more fully at the DEP's Long Island Sound License Plate web page, http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323786&depNav_GID=1635.

Sentinel Monitoring

1 The URL listed is likely to change as the web site contents are planned to be transitioned into the State of Connecticut web domain. All current content, data, and links will be retained and/or updated as part of the transition.

(Section 306) The focus of Sentinel Monitoring for Climate Change in Long Island Sound, begun as a partnership between the Department of Environmental Protection and the University of Connecticut (UConn) in 2008, is to determine how climate change impacts the water, habitat, and species of Long Island Sound. The goal of the program is to design and develop a dynamic climate change monitoring program for the ecosystems of the Sound and its coastal ecoregions. Sentinel monitoring of Long Island Sound has since evolved into a bi-state initiative with Federal support and an overarching Long Island Sound Study (LISS) workgroup that has obtained multiple grants to develop a strategic plan for the program. Connecticut and New York have both established working groups of academics, managers and experts on the local, state and Federal levels to address relevant issues. This specially designed, long-term monitoring program will identify resources in the Sound that are most vulnerable to climate change and most critical to protect. These efforts will ultimately enable DEP to develop appropriate adaptation strategies to protect the Sound's biodiversity and significant natural resources. Under the partnership, UConn has already helped DEP develop a sentinel monitoring database of historic monitoring data. The long-term plan is to develop a comprehensive website that will document ongoing research and serve as a resource for investigators, resource managers and the public. In addition to identifying a process for data collection and synthesis, the plan will help identify data and monitoring gaps that are necessary in the context of climate change to help identify trends on the regional, Sound-wide and local levels.

Mapping

(Section 306 and other) The Long Island Sound Resource Center (LISRC) was established in 1988 as a central clearinghouse for information and data related to Long Island Sound. This web site is an ongoing project to provide access to data and information about the Sound. Priorities for adding data and new information to the website are based on the availability and relevance of the material and are made at the request of the Office of Long Island Sound Programs. The LISRC website will continue to be modified for improved usability and increased content. The address of website is http://www.lisrc.uconn.edu. Information contained on the site includes:

- A web-based map that displays the coastal regulatory boundaries for Connecticut and assorted coastal resource data layers was added.
- Two sets of digital aerial photography of the coast of were made available to view and download: oblique photographs taken in 2003 and color infrared orthophotos taken in 2005. Additional historic aerial photos are being web-enabled as resources permit.
- Data layers and images related to the geology of Long Island Sound, including side-scan sonar images, sedimentary environment layers, and surficial sediment distribution maps.

(Section 309) OLISP conducted a Seafloor Mapping Workshop in 2007 and commenced the development of the draft comprehensive seafloor mapping strategy based on information such as the output from the user needs workshop, existing mapping extents, and priority areas. OLISP completed draft and final versions of a report summarizing the outcomes of the 2007 workshop and describing a long term vision for LIS seafloor mapping, which were distributed to workshop attendees. Output from a partnership between DEP and USGS utilizing data from NOAA hydrographic surveys that are integrated with other mapping data provided examples of potential data deliverables and helped organize a geographic prioritization of future LIS mapping. OLISP will continue progress on the seafloor mapping strategic plan and will work with the Cable Fund Steering Committee with the intent of determining the appropriate use of settlement funds from the Cross Sound/1385 Cable crossings settlement, such as data collection and discussion with various coastal states to evaluate application of the most effective seafloor mapping techniques

in Long Island Sound, and finalizing an approach for use of the Cable Fund for seafloor mapping activities and initiating a mechanism for disbursement of funds (e.g., RFP, MOU).

Education and Outreach

OLISP, administering the Long Island Sound License Plate Fund has issued a number of Education grants since the 2005 Assessment which are described more fully at the DEP's Long Island Sound License Plate web page, http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323786&depNav_GID=1635

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(Section 306) OLISP publishes notices and issues direct mailings on a continuing basis regarding comment periods, hearings and decisions on applications for state permits regarding structures, fill and dredging in tidal wetlands and tidal, coastal and navigable waters and other regulatory, rule-making, and planning functions.

(Section 306) OLISP now publishes the *Sound Outlook* newsletter on-line. Recent issues featured articles concerning hypoxia in Long Island Sound, American Recovery and Reinvestment Act-funded river restoration projects, the return of bottlenose dolphins to the Sound, American lobster population monitoring, ecological characteristics of tidal marshes in winter, and sentinel monitoring of climate change. Sound Outlook can be found on-line at http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323818&depNav_GID=1635

(Section 306 and 310) OLISP conducts coastal management workshops for land use officials in Connecticut's coastal towns as necessary. The workshops provide an overview of OLISP's Planning and Permitting/Enforcement Sections in an effort to re-energize efforts and commitments to protecting coastal resources and water-dependent uses. In the overview of the coastal site plan review process, the workshops highlight the basics of coastal nonpoint source management measures including Low Impact Development (LID) techniques to protect again the cutting, filling, or unnecessary disturbance of steep slopes, discourage increases in total impervious cover, encourage the incorporation of vegetated resource buffers and other non-traditional stormwater management techniques, and ensure that untreated stormwater is not discharged directly into tidal wetlands or discharged over an erodible slope. OLISP distributes the Connecticut Coastal Management Manual to municipal land use officials at these workshops, and updates the manual as necessary. The coastal management manual is also available on the web at http://www.ct.gov/dep/cwp/view.asp?a=2705&q=323814&depNav_GID=1622

(Section 306 and 310) The Clean Marina Program Coordinator conducts Clean Marina informational workshops for interested marine facility operators and managers as necessary to provide information about the Clean Marina program and the certification process. OLISP staff and the DEP Commissioner also participate in Clean Marina Certification events at the Connecticut Marine Trades Association Hartford Boat Show to present 12 new Clean Marina Certification Award Certificates.

(Section 306 and 309) OLISP staff have presented a variety of posters and participated in numerous workshop presentations at a variety of academic institutions, including the University of Connecticut's Conference on Natural Resources. Topics presented included Connecticut's Climate Change Adaptation Workshop and strategies, Long Island Sound Sentinel Monitoring, Clean Marina/Clean Boater/No Discharge Area/Clean Vessel Act Programs, Sea Level Rise

Visualization, and Connecticut's Coastal Management Program at a course on the Economics of Coastal Resources at the University of Connecticut.

(Section 306) OLISP conducted a comprehensive review and update of the *Connecticut Coastal Access Guide* Website http://www.lisrc.uconn.edu/coastalaccess/ to provide more accurate site descriptions or additional and improved photos of sites.

(Section 306) The Connecticut Aquaculture Permitting Workgroup gave a presentation at the Milford Aquaculture Seminar on February 8-10, 2010. The title of the presentation was "Navigating the Permitting Process for Shellfish Aquaculture and Related Activities in Long Island Sound." This presentation focused on recent aquaculture policy changes and provided a brief overview of the permitting process. OLISP staff also gave presentations on Aquaculture Permitting in Connecticut to municipal officials and members of local Shellfish Commissions as needed. The presentations provided the history of, and the reasons for DEP's involvement in, regulation of aquaculture activities, and offered guidance on the current permitting requirements for aquaculture operations.

(Section 306 and other) OLISP staff, together with the Cape Cod National Seashore and the U.S. Fish and Wildlife Service (USFWS), cosponsored the second annual Sudden Wetland Dieback conference. Staff members presented an overview of dieback in New England and, specifically, the status in Connecticut.

(Section 306) OLISP staff provided an overview of Connecticut's Coastal and Estuarine Land Conservation Program (CELCP) Plan and the process for nominating coastal land acquisition proposals for CELCP funding assistance at a workshops held in Milford and Waterford, CT.

(Section 306 and other) OLISP completed a demonstration garden of native coastal upland plants at the DEP's Barn Island Wildlife Management Area (W.M.A.) in Stonington. The gardens were constructed to provide coastal area residents with examples of native coastal upland plants to use on their own property to benefit wildlife, avoid impacts to water quality associated with traditional gardening practices and reinforce coastal Connecticut's regional landscape identity. The project was an outgrowth of the acquisition 144-acres of coastal forest and marsh added to Barn Island W.M.A. in 2005. Interpretive signs describing the garden, an adjacent salt marsh and the Barn Island W.M.A. were produced and installed.

(Section 306) OLISP and other DEP staff appeared in a documentary produced by Connecticut Public Broadcasting entitled "Hurricane: Direct Hit" to speak about the effects of coastal development on potential hurricane damage to Connecticut's coast.

(EPA funding) As discussed in the Coastal Hazards section, OLISP staff co-conducted a series of workshops in Groton to coordinate local, state, and federal government approaches to climate change adaptation issues for a coastal community.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be

addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary narrative can be provided below to describe major gaps or needs.

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Need for Comprehensive Dredged Materials Management	Policy, Outreach	High
Climate Change Resiliency and Adaptation; Shoreline Armoring and Tidal Wetland Refugia	Policy, Capacity, Outreach, Acquisition, Data Needs	High

Enhancement Area Prioritization

1. **What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

   High __X__
   Medium _____
   Low _____

   Briefly explain the level of priority given for this enhancement area.

   The Cumulative and Secondary Impact Category was identified as a high priority in the previous three assessments. While threats to coastal resources continue to be an important issue, these threats are addressed through existing programs that continue to be fine-tuned and improved, while development pressure has leveled-off somewhat since the previous assessment. More immediate threats lie in the state's reduced capacity to accommodate in-water disposal of dredged material, the need to address shoreline vulnerability and tidal wetland refugia in the face of climate change and sea level rise, and the need to dredge, especially in ports where the conversion of working waterfronts into other uses is threatening to eliminate water-dependent uses.

2. **Will the CMP develop one or more strategies for this enhancement area?**

   Yes ___X___
   No _____

   Briefly explain why a strategy will or will not be developed for this enhancement area.

   A strategy to establish program changes in accordance with the Dredged Material Management Plan (DMMP) to investigate disposal site designation and beneficial reuse of dredged materials will be pursued for the Cumulative and Secondary Impacts and Ocean Resources enhancement areas. The increasing regional emphasis on alternatives to open water disposal poses a potential threat to the sustainability of Connecticut's water dependent uses, many of which depend on dredging to maintain navigational access to their facilities. Without cost effective and

environmentally sound sediment management options, these facilities will be forced to choose between high cost, less-feasible management alternatives and not dredging at all, with consequent diminished navigational access. Accordingly, failure to develop feasible dredged material options will likely result in a significant loss of these water dependent uses.

Strategies for climate change-related issues (shoreline armoring, resiliency and adaptation) will be pursued as described in the Coastal Hazards enhancement section.

A strategy to pursue regional coastal and marine spatial planning will be developed, as described in the Ocean Resources enhancement section. Any Coastal and Marine Spatial Planning (CMSP) strategy will be expected to address dredged material disposal sites and other spatial aspects of dredging issues, as well as offshore spatial impacts of climate change.

Special Area Management Planning

Section 309 Enhancement Objective
Preparing and implementing special area management plans for important coastal areas.

> The Coastal Zone Management Act (CZMA) defines a Special Area Management Plan (SAMP) as "a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making."

Resource Characterization
Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. Identify geographic areas in the coastal zone subject to use conflicts that can be addressed through special area management plans (SAMP). Also include areas where SAMPs have already been developed, but new issues or conflicts have developed that are not addressed through the current plan. If necessary, additional narrative can be provided below.

Geographic Area	Major conflicts	Is this an emerging or a long-standing conflict?
Lower Connecticut River	• invasive species especially common reed, *Phragmites australis*, • the invasive submerged aquatic plant water chestnut, *Trapa natans*, • impaired habitat • development pressure	Long-standing
Little Narragansett Bay, Stonington Harbor, Mystic Harbor, Poquonnock River and Niantic River	• degradation of eelgrass beds. • impaired habitat • development pressure	Long-standing
CT Coastal Zone	• the effects of climate change (e.g.,	Emerging

	sea-level rise, marsh migration, more frequent and extensive flooding) are expected to pose use conflicts in both the near and long term.	
Long Island Sound	See Ocean Resources section	Emerging

At this time, there are no overwhelming imperatives for the development of formal SAMPs. Long Island Sound itself could be considered a Special Area, but issues related to offshore areas are described in the Ocean Resources enhancement area, and will be addressed through a Coastal and Marine Spatial Planning strategy approach. However, as documented in the Management Characterization section below, it is worth noting several efforts with regard to the management of the above listed geographic areas.

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. Identify below any special management areas in the coastal zone for which a SAMP is under development or a SAMP has been completed or revised since the last assessment:

SAMP title	**Status** (new, revised, or in progress)	**Date approved or revised**
See below		

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

a) Characterize significant changes since the last assessment (area covered, issues addressed and major partners);

b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and

c) Characterize the outcomes and effectiveness of the changes.

While CT does not formally use the SAMP format it is nevertheless worth noting how the CT Coastal Management Program functions to address management issues or needs in the coastal zone. In the interest of brevity, the examples below were selected to provide a representative sample and do not constitute a full inventory of initiated or completed projects considered significant changes for the geographic areas listed since the last assessment period.

Public Outreach/Education:

- Scientists and Educators Investigating Near-Shore Ecosystems (SEINE)
  - Area: Lyme (Lower CT River)
  - Issue(s): impaired habitat, invasive species
  - Partners: Somers Board of Education

- Funding: LIS License Plate Fund
- Outcomes: An inquiry-based hands-on educational program to teach students about variables impacting fish populations in Eastern Long Island Sound.

- Groton Climate Change Workshop Series
  - Area: Groton/Stonington
  - Issue(s): emerging impacts of climate change
  - Partners: ICLEI – Local Governments for Sustainability; EPA Climate Ready Estuaries, Town of Groton
  - Funding: EPA Climate Ready Estuaries
  - Outcomes: A series of hands-on workshops to engage stakeholders at the Federal, State, and local levels to better understand the science behind climate changes and the potential impacts and management solutions to promote sustainability through adaptation strategies.

Habitat Restoration:

- Ayers Point Phragmites Control
  - Area: Lyme (Lower CT River)
  - Issue(s): invasive species
  - Partners: Connecticut Department of Environmental Protection - Wildlife Division; private land owners
  - Funding: Natural Resources Conservation Service - Wetlands Reserve Program; private land owners
  - Outcomes: The herbicide Rodeo was applied to approximately 135 acres of tidal wetlands that were infested with very dense Phragmites australis. After the application stalks were mulched to allow sunlight to penetrate to the soil and facilitate the regrowth of typical and native brackish wetland vegetation.

- Crowley Land Acquisition - Parcel 1
  - Area: Stonington
  - Issue(s): development
  - Partners: Connecticut Department of Environmental Protection - Office of Long Island Sound Programs, and Land Acquisition & Management Division; The Nature Conservancy - Connecticut Chapter; Stonington Land Trust; Town of Stonington; National Audubon Society - Connecticut; United States Environmental Protection Agency - Long Island Sound Study
  - Funding: United States Environmental Protection Agency - Long Island Sound Study National Estuary Program / Stewardship Program Fund; Connecticut Department of Environmental Protection - Recreation & Natural Heritage Trust Program; The Nature Conservancy - Connecticut Chapter; National Fish & Wildlife Foundation - Long Island Sound Futures Fund
  - Outcomes: Acquisition of 48.7 acres of coastal property that has become part of the Barn Island Wildlife Management Area, raising the total protected acreage at Barn Island to 1,225 acres. The property was initially acquired by the Nature Conservancy and was transferred to Connecticut Department of Environmental Protection shortly thereafter.

Research:

- Modeling, Mapping, and Monitoring the Complex Mosaic of Plant Biodiversity of a Brackish Tidal Wetland, Ragged Rock Creek, Connecticut River
  - Area: Lower CT River
  - Issue(s): invasive species
  - Partners: UCONN
  - Funding: LIS License Plate Fund
  - Outcomes: A research study to describe, model, and map the plant biodiversity of Ragged Rock Creek tidal marshes, using advanced remote-sensing techniques and modern analysis as a means to quantify the complex mosaic of a large brackish marsh tidal system

- Assessing the Impact of Mute Swan Grazing on Long Island Sound Eelgrass Beds
  - Area: Lyme, Old Lyme (Lower CT River); Stonington
  - Issue(s): eelgrass degradation
  - Partners: DEP/Wildlife Division
  - Funding: LIS License Plate Fund
  - Outcomes: A research study to test the hypothesis that loss of shallow water eelgrass beds can be attributed to persistent grazing by resident mute swans and Canada geese.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy)

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)

There are no major gaps in meeting the programmatic objectives for this enhancement area.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to CZMA funding)?

High _____
Medium _____
Low ___X__

Briefly explain the level of priority given for this enhancement area

Due to the breadth and scope of existing OLISP efforts and programs, there is little need for formal SAMP structures in Connecticut's coastal zone. Accordingly, this area was a low priority in the last assessment and remains a low priority for this assessment.

2. Will the CMP develop one or more strategies for this enhancement area?

Yes _____
No ___X___

Briefly explain why a strategy will or will not be developed for this enhancement area.

Due to the breadth and scope of existing OLISP efforts and programs, there is little need for formal SAMP structures in Connecticut's coastal zone. Accordingly, developing specific strategies for this enhancement area is not warranted, although Ocean Resources strategies are proposed to address many special area management issues.

Ocean/Great Lakes Resources

Section 309 Enhancement Objective
Planning for the use of ocean resources

Resource Characterization
Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. In the table below characterize ocean and/or Great Lakes resources and uses of state concern, and specify existing and future threats or use conflicts.

Resource or Use	**Threat or Use Conflict**	**Degree of Threat** (H/M/L)	**Anticipated Threat or Use Conflict**
Benthic Habitat and bottom waters (central and western LIS)	Summer hypoxia from nitrogen enrichment as influenced by point and non-point source nitrogen	H	water quality degradation, adverse impacts on living resources
Submerged aquatic vegetation	Point and non-point source nitrogen enrichment	Location dependent (L to H)	habitat loss in central and western LIS and select eastern embayments
Habitats – pelagic and benthic, CT River Ramsar wetlands, aquaculture, commercial and recreational fishing	global climate change and global warming	H	species shifts, salt wedge shifts upstream on larger rivers; fish/shellfish mortality; increases in the frequency of shellfish diseases; increase in harmful algae blooms; impacts upon various fisheries
All Habitats	Oil spills	H	adverse impacts on living resources
All habitats	Limited or non-existent monitoring/observational data on environmental conditions	H	Limited capacity for application of EBM principles, adaptive management
Habitats – pelagic and benthic,	Invasive non-native species.	M	Adverse impacts upon biological

recreational and commercial fishing			diversity
Benthic habitats and living resources, aquaculture, fishing, marine commerce and recreational boating	The growing number of energy facilities (cables/pipelines) is an example of activities that can be proposed in any location of the Sound in the absence of marine spatial planning.	H	Adverse impacts to benthic habitats and various fisheries; diminished bottomland habitat diversity, diminishment of access for traditional water dependent uses
Recreational boating and marine transportation facilities such as shipping terminals	loss of access to existing facilities in the absence of dredged material management plan	H	reduced access to harbors and marinas – increased cost for commercial product such as home heating oil

2. Describe any changes in the resources or relative threat to the resources since the last assessment.

Nitrogen enrichment is the primary cause of hypoxia and declines of submerged aquatic vegetation. Hypoxia continues to be one of the leading management issues for central and western LIS. Nitrogen enrichment is also responsible for the near absence of the submerged aquatic vegetation, Eelgrass (*Zostera marina*), from western LIS. Some eastern beds, especially those in embayments, have also declined from nitrogen enrichment.

Global climate change and global warming are continuing to impact Long Island Sound. There have been finfish shifts in the Sound favoring warmer water species. The long-term LIS temperature data and the local long-term monitoring by Millstone/Dominion in the Waterford area demonstrate a warming trend in the Sound, especially in winter months. Warming has contributed to lobster mortality and thus is affecting a major fishery in the Sound. Submergence of tidal wetlands continues in western LIS. The new evidence for rate of ice melt around the globe leads us to project that all the tidal wetlands in the Sound will be threatened with submergence. Scientists forecast an increase in harmful algae blooms and shellfish diseases as warming progresses. LIS oyster populations have yet to recover from diseases in the late 1990's. Global warming is likely having an impact on the number of fish kills, mussel die-off and macroalgae blooms.

Dredged sediments from LIS ports and waterways have historically been managed by disposal at open water disposal sites in LIS. There are currently 4 regional open water sites, two of which have been designated pursuant to the Marine Protection Research and Sanctuaries Act (MPRSA) by EPA. These sites receive the majority of sediments dredged from the CT and NY portions of LIS. Prior to obtaining necessary permits from the Corps of Engineers and the CT DEP,

sediments proposed for open water disposal must be tested for physical and chemical parameters, including a regional list of Contaminants of Concern. Based upon the type and concentration of the various parameters tested, an appraisal of the sediments probability of causing adverse environmental effects is made. In the case of all projects subject to the MPRSA and any other project at the discretion of the regulatory agencies, biological effects testing including acute toxicity and bioaccumulation testing is conducted to determine actual effects of sediments on organisms. Sediments that exhibit toxicity or unacceptable bioaccumulation of contaminants are not allowed to be disposed of at open water sites, while projects whose sediments pass biological testing but have elevated contaminant concentrations will be required to cap those sediments at the disposal site with clean sediment as an added best management practice to sequester the contaminants from the surrounding benthos.

Energy proposals (especially cables and pipelines) for LIS, as discussed in the Energy section of this Assessment, continue to present issues. The absence of data such as the distribution of submerged habitats and the classification of rare estuarine species are impediments to planning and permitting of energy facilities. Facilities such as the proposed Broadwater floating LNG plant with their associated security zones have the potential to reduce access to the Sound by commercial and recreational fishermen and the boating public and impact marine commerce.

Invasive species introduced by man have the potential to alter the biodiversity of LIS and potentially impact uses such as fishing. There are several new introductions in the Sound including the Asian or Japanese shore crab (*Hemigrapsus sanguineus*) and the red alga *Grateloupia turutura*. The latter has the potential to displace the native Irish moss (*Chondrus crispus*) in intertidal and shallow subtidal areas.

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

Management categories	**Employed by state/territory** (Y or N)	**Significant changes since last assessment** (Y or N)
Comprehensive ocean/Great Lakes management plan or system of Marine Protected Areas	N	N

Regional comprehensive ocean/Great Lakes management program	N	N
Regional sediment or dredge material management plan	Y	Y
Intra-governmental coordination mechanisms for ocean/Great Lakes management	Y	NROC
Single-purpose statutes related to ocean/Great Lakes resources	N	N
Comprehensive ocean/Great Lakes management statue	N	N
Ocean/Great Lakes resource mapping or information system	Y	LIS Sea Floor mapping
Ocean habitat research, assessment, or monitoring programs	Y	Bi-State (CT/NY) Sentinel Monitoring Effort; NERACOOS: LISICOS
Public education and outreach efforts	N	N
Other (please specify)		

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

a) Characterize significant changes since the last assessment;

b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and

c) Characterize the outcomes and effectiveness of the changes.

Regional sediment or dredge material management plan.

The Sediment Quality Information Database (SQUID), a GIS database of dredging sediment sample locations and chemistry, was completed in 2001. The SQUID provides a history of sediment chemistry between different sampling locations in a harbor, and with earlier sampling efforts at a specific location. Use of the SQUID allows better site specific sampling plan formulation, based upon a site chemical history and indicates, over time, if a location or harbor is becoming cleaner or more polluted.

As discussed in the 2006 Assessment, the Corps of Engineers, at the request of the Governors of CT and NY, has undertaken a Dredged Material Management Plan (DMMP) for Long Island Sound. A Steering Committee that includes members from the NY Department of State, NY State Department of Environmental Conservation (DEC), CT DEP, USEPA Regions 1 & 2, USACOE New England & New York Districts, and North Atlantic Division, and NOAA National Marine Fisheries Service oversees the effort and has appointed a Product Delivery Team to develop the DMMP. OLISP has reviewed the Scope of Work for efforts being

undertaken by the Army Corps of Engineers, will assist data collection when possible, and will review the draft results for accuracy and relevance. Efforts being undertaken by the Corps of Engineers include updating and revising upland and beneficial use placement opportunities; identification of applicable federal/state programs, statutes and regulations; updating the comprehensive database outlining the known environmental data for use in alternative disposal site identification and screening; and inventorying cultural resources. Under a previous grant task, OLISP compiled an inventory of potential beach nourishment sites from existing information sources and created a database and GIS point coverage of these locations. Site-specific data on alternative disposal sites will be reviewed when available for possible additional beach localities to be added to that GIS coverage. A draft General Permit for Beneficial Use of Contaminated Sediments is currently being developed.
With currently available funding, the DMMP is expected to be completed in 2013.

The advent of regional Coastal and Marine Spatial Planning (CMSP) to address conflicts between competing uses and values offers an opportunity to resolve existing and future interstate disputes over dredged material disposal. Due to geographic, economic and historical factors, Connecticut contains the major share of harbors, basins and navigation channels in the Sound, many of which require regular maintenance dredging. As a result, Connecticut's maritime interests, as well as the boating public and federal agencies such as the Navy and Coast Guard, have a strong interest in facilitating dredging projects and dredged material disposal, and OLISP has a long history of assisting these interests in balancing dredging needs with coastal natural resource protection. As a result, we have often had occasion to approve open-water disposal of dredged materials at designated sites within the Sound, with appropriate capping, time-of-year closures and other management measures. By contrast, New York's coastal management program, having substantially different needs for dredged material disposal, has traditionally objected to open-water dredged material disposal in LIS. The DMMP was intended to balance both states' interests, but it remains a work in progress.

The dredged material management issue was clearly brought home recently by NY DOS's use of its interstate consistency authority to deny the use of the New London Disposal site for material from a Navy dredging project at the New London submarine base. The Navy disagreed strongly with DOS's interpretation of New York's coastal policies, but given severe time constraints they chose not to challenge the consistency denial but to shift the disposal location to the Central LIS disposal site. The convergence of a number of factors - NY DOS's stated intention to eventually eliminate open-water disposal of dredged materials in the Sound, the impending closure of LIS open-water disposal sites unless a DMMP is timely completed, and the current lack of any economically feasible alternatives - poses a significant challenge to Connecticut's future maritime commerce. Without economical disposal options, dredging projects, both Corps and private, will not be undertaken, many harbors may not be usable by larger boats and some marinas may find their operations substantially impaired.

<u>Intra-governmental coordination mechanisms for ocean/Great Lakes management.</u>
OLISP participates in two related interstate "ocean" planning institutions. All of Connecticut's offshore "ocean resources" lie within the ambit of the EPA National Estuary Program known as the Long Island Sound Study. http://longislandsoundstudy.net. Through this bi-state (CT/NY) and federal partnership there are a number of regional workgroups such as nutrients, habitat restoration and stewardship. In addition, OLISP serves as Connecticut's representative to the Northeast Regional Ocean Council (NROC), created in 2005 by the New England Governors

Conference and Eastern Canadian Premiers. http://collaborate.csc.noaa.gov/nroc/default.aspx
The Commissioner of DEP is one of two CT representatives appointed by Governor Rell to serve on NROC, and OLISP staff have continuously participated in NROC since its inception, with the Director of OLISP serving on NROC's Executive Committee from 2008-2010. NROC focuses on regional issues of coastal and ecosystem health, coastal hazards, and energy facilities planning. At the time of the last Assessment, and occasionally since then, there also has been some discussion within NROC regarding the formation of a more-or-less independent subregional council around the ecosystem theme of the Sounds of Southern New England/New York, or other form of partnership with New York to address Long Island Sound spatial planning issues.

In the meantime, ocean management attained greater prominence on a national and international level, with continuing follow-up from the Pew and U.S. Oceans Commissions leading to President Obama forming a National Ocean Policy Task Force in 2009. This Task Force produced an Interim Report advocating regional ecosystem-based management of ocean resources, together with an Interim Framework for Effective Coastal and Marine Spatial Planning, culminating in a set of final recommendations to establish a national ocean policy overseen by a National Ocean Council. The Final Recommendations were officially adopted and made effective by an Executive Order dated July 19, 2010.[1]

NOAA is already moving forward to implement the centerpiece of the new ocean policy, regional CMSP, using anticipated funding, and NROC is taking steps to undertake coastal and marine spatial planning for the Northeast region. At the state level, all Connecticut's adjoining states are undertaking marine spatial planning initiatives, with the Massachusetts Ocean Plan and Rhode Island Ocean SAMP attaining national prominence.[2] The submerged lands strategy outlined in our last Assessment and Strategy could not get traction for moving forward as a management plan, although we did make progress in developing the issue and addressing lighthouse transfers. In the meantime, the development of a National Ocean Policy focused on regional CMSP has completely altered the context within which we hoped to address offshore resource management and use conflicts within Connecticut's offshore waters. Unfortunately, no existing CMSP initiative encompasses the entirety of Long Island Sound, and Connecticut continues to lack the capacity and institutional framework for taking advantage of the CMSP opportunities presented by the new national policy. While CMSP has not, heretofore, been a priority in Connecticut, it is increasingly gaining attention as a topic of discussion among LIS stakeholders.

Ocean/Great Lakes resource mapping or information system
Through a multi-agency partnership, the sedimentary environment of portions of the deeper waters (>30 feet) of the Sound has been mapped and an internet GIS map is accessible through the USGS website. This project contains related information on chemistry, benthic sampling, and geology to name a few. Through the Long Island Sound Research Fund, benthic community analysis was conducted in several small pilot areas.

In 2007, OLISP and the University of CT Marine Sciences Dept jointly hosted a workshop to bring a variety of user groups within the LIS region together to discuss the management needs

1 http://www.whitehouse.gov/administration/eop/ceq/initiatives/oceans
2 New York http://www.nyoglecc.org/index.html; Rhode Island http://seagrant.gso.uri.edu/oceansamp/; Massachusetts http://www.mass.gov/czm/oceanmanagement/index.htm .

that require a sea floor mapping program to address. The results of the workshop were synthesized in a report. In 2009, OLISP staff and representatives from EPA Regions 1 & 2, NY DOS and DEC, and the CT and NY Sea Grants formally convened a Steering Committee to administer a settlement fund aimed at addressing the need for more comprehensive information about LIS. The Steering Committee's focus was to use the funds to acquire seafloor mapping data similar to that that being collected in MA by the MA CZM and USGS collaborative. To date, the Committee has crafted a vision document outlining the basic needs and requirements and posted an RFQ & I to gauge capabilities from interested parties.

Ocean habitat research, assessment, or monitoring programs

OLISP Staff were involved in the formalization of the Northeast Regional Association of Coastal and Ocean Observation Systems (NERACOOS). Formally incorporated in 2008, NERACOOS's mission is:

- To lead the development, implementation, operation, and evaluation of a sustained, regional coastal ocean observing system for the northeast United States and Canadian Maritime provinces, as part of the United States Integrated Ocean Observing System (IOOS).
- To promote the development, assessment, and dissemination of data and data products that meet the needs of end users.
- To advocate through education and outreach for the regional, national, and global ocean observing system and the application of scientific assessments using environmental data to meet societal needs.

Currently, OLISP staff serve on the Board of Directors, as well as the Finance and Strategic Planning Committees. NERACOOS incorporates the Long Island Sound Integrated Coastal Observing System (LISICOS), for which OLISP developed a 10 year preliminary draft strategy and priorities plan for based on a 2005 Long Island Sound User Community Needs Workshop. For more detailed information on the nature and location of IOOS sensors in Long Island Sound, please the LISICOS home page at http://lisicos.uconn.edu/

In addition, OLISP is undertaking a regional partnership on Sentinel Monitoring for Climate Change in Long Island Sound, as discussed in the Cumulative and Secondary Impacts and Coastal Hazards sections of this Assessment.

Finally, OLISP has long identified the need for a Connecticut National Estuarine Research Reserve (NERR) to coordinate science and education to improve the management of Long Island Sound. A NERR would provide a central focus for education and training for local communities and stakeholders, and serve to leverage federal resources and programs to enhance research and long-term monitoring of the Sound and its resources. OLISP has submitted a draft CT NERR Site Selection Document to NOAA Estuarine Research Division (ERD) staff, and is currently working to address remaining concerns, most notably regarding issues on the use of climate change criteria in the site selection process. OLISP hopes to submit a final draft Site Selection document in the near future.

Priority Needs and Information Gaps

Use the table below. Identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section

309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need Description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Regional Coastal and Marine Spatial Planning	Capacity-building, regulatory authority and support	H
Dredged Material Management	Regulatory, policy	H
NERR	Training, outreach	M

As in the last Assessment, Connecticut lacks a central agency to oversee proposed uses of Long Island Sound, lacks a submerged lands leasing program and lacks a marine spatial planning/ ocean governance strategy. A marine spatial planning capability will be critical to managing uses such as energy facilities that could cause environmental impacts and impact marine commerce, commercial and recreational fishing and boating. Connecticut has only partial data on sea floor mapping (i.e., sedimentary mapping in deep waters). Absent a more complete mapping of the sedimentary environments, habitats and uses, it is not possible to construct a meaningful ocean governance plan that would be essential to conserve ocean resources, protect marine commerce and marine fishing to name but a few uses.

Creation of a National Estuarine Research Reserve would provide critical education and research support to the Connecticut Coastal Management Program. The mandatory Coastal Training Program (CTP) would greatly enhance training for municipal staff with regard to coastal site plan review. CTP could also develop education programs that target on-going and emerging coastal management issues such as periodic training for managers of coastal barrier beaches about beach dynamics and the hazards of erosion and retreat. All of the listed resources in the characterization section would benefit from research. The SWMP monitoring program would be invaluable to issues such as climate change and resource response.
http://ctclimatechange.com/index.php/ct-happenings/gsc-adaptation-subcommittee
Connecticut continues to participate in the development of an interstate, intergovernmental dredged materials management plan for Long Island Sound. The development of this plan for Long Island Sound is critically important to the future viability of marine commerce and recreational boating. With the assistance of a CSC Coastal Management Fellow, OLISP created the Sediment Quality Information Database (SQUID), which compiles all data that has characterized sediment quality in association with dredging projects. SQUID is a critical component of the DEP's management of dredged sediments and it supports decisions on permits by the Corps and DEP. Changes in the dredged sediment management regime, as well as changes in sediment characteristics over time, require the updating of SQUID.

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

High __X__

Medium _____
Low _____

Briefly explain the level of priority given for this enhancement area.

As discussed above, coastal and marine spatial planning and dredged material management are high-profile opportunities and issues that are growing in importance nationally and for Long Island Sound.

2. Will the CMP develop one or more strategies for this enhancement area?

Yes ____X_
No _____

OLISP is proposing strategies to meet programmatic needs in dredged material management and coastal and marine spatial planning, which will also address needs specified in the Cumulative and Secondary Impacts and Energy enhancement areas.

Energy and Government Facility Siting

Section 309 Programmatic Objectives

Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance.

Resource Characterization

Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. **In the table below, characterize the types of energy facilities in your coastal zone (e.g., oil and gas, Liquefied Natural Gas (LNG), wind, wave, Ocean Thermal Energy Conversion (OTEC), etc.) based on best available data. If available, identify the approximate number of facilities by type.**

Type of Energy Facility	**Exists in CZ** (# or Y/N)	**Proposed in CZ** (# or Y/N)	**Interest in CZ** (# or Y/N)	**Significant changes since last assessment** (Y or N)
Oil and gas storage and distribution facilities	Y	N	Unknown	N
Pipelines	Y	N	Unknown	N
Electric transmission cables	Y	N	Y	N
LNG	N	N	Unknown	Y
Wind	Small examples on land	No large-scale or in-water	Unknown	N
Wave	N	N	Unknown	N
Tidal	N	Yes, unofficially		
Current (ocean, lake, river)	N	Yes, in adjacent NY waters	Unknown	N
OTEC	N	N	N	N
Solar	Small examples on land	No large-scale or in-water	Unknown	N
Other (please specify)				

1. Please describe any significant changes in the types or number of energy facilities sited, or proposed to be sited, in the coastal zone since the previous assessment.

The most significant changes have been what didn't happen; the Broadwater LNG proposal was denied by the State of New York, and a proposed underwater DC electric transmission line which was to have

served New York City and Bridgeport with wind-generated power from Canada abandoned its Connecticut component and now intends to terminate in New York. OLISP staff have been contacted regarding potential tidal power projects in the Housatonic River and in the Race off Fishers Island, but no formal applications have been submitted.

2. Does the state have estimates of existing in-state capacity and demand for natural gas and electric generation? Does the state have projections of future capacity? Please discuss.

This information is compiled in the most recent Connecticut Energy Plan adopted by the Connecticut Energy Advisory Board (CEAB). See 2007 Energy Plan for Connecticut, CEAB, approved February 6, 2007, http://www.ctenergy.org/pdf/2007_Energy_Plan.pdf and the CEAB Various Energy Issues Phase I and II reports at http://www.ctenergy.org/Documents.html

3. Does the state have any specific programs for alternative energy development? If yes, please describe including any numerical objectives for the development of alternative energy sources. Please also specify any offshore or coastal components of these programs.

Connecticut is a member of the Regional Greenhouse Gas Initiative, and has set statutory goals for reductions in greenhouse gas emissions and for the percentage of renewable electric generation in the State's energy mix (Renewable Portfolio Standards).1 However, while increasing use of alternative energy is a formal goal of state policy, there are no specific state programs to develop alternative energy generating facilities, nor are there specifically coastal or marine components of Connecticut's energy plan. However, offshore wind farms and tidal power generators are occasionally mentioned by interest groups, and transmission cables from these facilities may run through Long Island Sound. No natural gas pipeline or facility proposals have been discussed for the Sound since the demise of the Broadwater and Islander East pipeline proposals.

4. If there have been any significant changes in the types or number of government facilities sited in the coastal zone since the previous assessment, please describe.

In the past, military base closures and consolidations have affected Connecticut's coastal area through the closure of the Stratford Army Engine Plant and the Naval Undersea Warfare Center in New London, and the threatened closure of the New London Submarine Base. The coastal issues related to these base closures were successfully addressed by OLISP through municipal coastal site plan review, state regulation, and federal consistency requirements applying the existing resource protection and water-dependent use standards of the CMA. The remediation, transfer and ultimate reuse of the Stratford Army Engine Plant, however, are still pending and OLISP will continue to work with DEP Remediation staff and the Department of the Army to promote appropriate reuse of this waterfront site

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1 [1] CGS §16a-3a; 2007 Energy Plan for Connecticut

1. Does the state have enforceable policies specifically related to energy facilities? If yes, please provide a brief summary, including a summary of any energy policies that are applicable to only a certain type of energy facility.

The Connecticut Coastal Management Act defines "facilities in the national interest" to include energy facilities, at CGS §22-93(14), and establishes policies for siting such facilities at CGS §22-92(a)(10). In addition the Connecticut Siting Council must meet certain statewide environmental criteria for locating electric transmission lines, per CGS §§16-50g and 16-50p.

2. Please indicate if the following management categories are employed by the State or Territory and if there have been significant changes since the last assessment:

Management categories	**Employed by state/territory** (Y or N)	**Significant changes since last assessment** (Y or N)
Statutes or regulations	Y	N
Policies	Y	N
Program guidance	N	N
Comprehensive siting plan (including SAMPs)	N	N
Mapping or GIS	Y	Y
Research, assessment or monitoring	Y	N
Education and outreach	N	N
Other (please specify)		

Connecticut's 2006 Assessment noted a number of concerns regarding OLISP's ability to address the needs of energy-related and government facilities while still providing adequate protection for Connecticut's coastal resources. At that time, military base closures and energy projects prompted by the deregulation of the utility industry caused a number of programmatic challenges. Since then, however, both of these challenges have diminished substantially in the near term. Nonetheless, our coastal management program could benefit significantly from additional capacity to manage similar projects and issues should they recur.

Our previous Assessment postulated that deregulation would continue to drive energy speculation projects along Connecticut's coast. However, while a number of energy-related projects in Connecticut's coastal area have been discussed in recent years, including prototypes of tidal energy projects in Connecticut's tidal rivers and estuaries and a DC electric transmission line extending up through Long Island Sound from New York City to Bridgeport, no significant energy project has reached the application stage since the Broadwater floating LNG terminal proposal. As discussed in the last Assessment, the Broadwater Energy consortium filed an application with the Federal Energy Regulatory Commission to permanently moor a floating barge to be used for the storage and distribution of liquefied natural gas, with an associated underwater pipeline to Long Island and a security zone around the facility. While all components of the facility, except for a small portion of the security zone, were to be on the New York side of Long Island Sound, the project attracted tremendous opposition in

Connecticut as well as in New York, and OLISP was actively involved in commenting on the FERC Environmental Impact Statement (EIS).[1] In addition, as discussed in the last Assessment and Performance Report, the Connecticut legislature established several task forces, convened panels, and considered legislation in response to Broadwater and other large-scale energy facilities proposed for the Sound.

Although FERC approved the Broadwater facility, the New York Department of State denied CZMA consistency for the project on April 10, 2008. On April 13, 2009, the Secretary of Commerce upheld New York's denial. Despite Broadwater's subsequent appeal to federal court, political leaders and the public considered the project dead, and attention quickly shifted away from the larger issues associated with managing LIS energy facilities.

Even with the recession, however, electricity demand continues to grow, and Connecticut will still need to upgrade transmission lines, secure additional sources of natural gas, and meet renewable portfolio standards with wind or tidal electric generation projects. Many of these projects will be of a large scale, have regional ramifications, and be located in or directly affect Long Island Sound. Thus, while Connecticut has made little progress in establishing submerged lands management or marine spatial planning to deal proactively with energy facility siting, energy projects are almost certain to re-emerge in the future, and our coastal management program will be in exactly the same position to deal with them as we were ten years ago.

Under our existing authorities and arrangements, OLISP will continue to review specific proposals for submerged power transmission lines, fiber optic cables, natural gas pipelines and new alternative energy sources (wind, wave, and tidal) which can pose threats of benthic habitat disruption and resource use conflicts. However, without a comprehensive planning or management mechanism, we will continue to play catch-up, even as our neighboring states embark on coastal marine and spatial planning as discussed in the oceans section of this Assessment.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H.M,L)
Regional Coastal and Marine Spatial Planning	Capacity-building, regulatory authority and support	H

As discussed in the 2006 Assessment, the existing mechanisms for implementing Connecticut's existing coastal management standards and authorities may no longer be adequate to address the issues associated with the development of new energy facilities in and near Long Island Sound. The

1 At the time the Broadwater application was filed, Connecticut had not received OCRM approval for its interstate CZMA consistency list, and thus could not apply federal consistency authority to the New York portions of the project.

controversies over interstate cables and pipelines highlighted two potential program deficiencies: a lack of resource and habitat information, especially for offshore, open-sound areas; and the lack of comprehensive mechanism to spatially plan for and manage uses of the State's submerged public trust lands and waters. Without offshore use, resource and mapping information, Connecticut was handicapped in evaluating pipeline and cable proposals and cannot readily analyze potential adverse impacts or suggest preferable alternative locations. As discussed in the Oceans section of this Assessment, we have made progress in promoting seafloor mapping and in coordinating with other New England states in a regional CMSP effort, but we have been less successful in bringing CMSP to Long Island Sound.

Enhancement Area Prioritization

1. **What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

   High _____
   Medium ___X____
   Low _____

   Briefly explain the level of priority given for this enhancement area.

This area had been identified as a low priority in the 2001 assessment. Given significant recent developments regarding energy facilities and the threatened base closure, it was raised to a high priority in 2006. With deregulation, the passage of the Energy Bill in 2005, and the continuing growth of energy demands of Long Island and coastal Connecticut (especially southwest Connecticut), we expect that we will continue to see a rise in the number and types of new energy projects. Recent experience has shown that existing planning and regulatory programs are inadequate to deal with large-scale energy projects, and that we lack baseline information on offshore resources, including submerged lands mapping. Unlike in 2006, there are no major energy facility proposals pending or immediately foreseeable, so OLISP has downgraded the priority of this Enhancement Area to medium. Nonetheless, Connecticut should take advantage of this lull to develop the capacity and institutional framework to be prepared for the next Broadwater or Islander East, by bringing Long Island Sound into the national movement for marine spatial planning.

2. **Will the CMP develop one or more strategies for this enhancement area?**

   Yes ___X____
   No _____

A regional Coastal and Marine Spatial Planning strategy will be developed for this enhancement area, as well as for the Ocean Resources and Cumulative and Secondary Impacts areas.

Aquaculture

Section 309 Enhancement Objective
Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable States to formulate, administer, and implement strategic plans for marine aquaculture.

Resource Characterization
Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. Generally characterize the private and public aquaculture facilities currently operating in your state or territory.

Type of existing aquaculture facility	Describe recent trends	Describe associated impacts or use conflicts
Type 1 and Type 2[1]: While traditional bottom cultivation of shellfish is still the predominant form of aquaculture in Long Island Sound, the use of submerged and floating aquaculture gear (e.g. bags, cages, upwellers, and predator netting) and hatchery equipment has become increasingly popular. Shellfish-Eastern oyster and northern quahog are the most commonly grown species.	There are an increasing number of inquiries about aquaculture projects. Aquaculture projects have been undertaken in approximately 12 coastal communities.	Competition amongst the various users of the waters of the state (sound, coves, bays, rivers, etc.) Aesthetic issues-neighbors view structures as being unsightly. Navigational impacts. Impacts to resources and habitats. Environmental effects. Impacts to fishing. Impacts to cultural resources.
Type 3: Finfish	There are currently no permitted marine finfish systems. However, freshwater finfish industry grows mainly trout and baitfish. Finfish are cultivated mainly for stocking in "Hunt Club"	Aesthetic

1 Please refer to the Resource Characterization discussion in the 2006 Aquaculture Assessment for a discussion of types of aquaculture activities.

	ponds and for bait use outside of the coastal area. The Department of Environmental Protection operates two trout hatcheries for stock enhancement, and the State also has a federally managed salmon culture facility.	

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. **For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

Management categories	**Employed by state/territory** (Y or N)	**Significant changes since last assessment** (Y or N)
Aquaculture regulations	Y	N
Aquaculture policies	Y	N
Aquaculture program guidance	Y	Y
Research, assessment, monitoring	Y	N
Mapping	Y	N
Aquaculture education & research	Y	N
Other (please specify)		

2. **For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.**
   a) **Characterize significant changes since the last assessment;**
   b) **Specify if it was a 309 or other CZM driven change (specify funding source) or if it was driven by non-CZM efforts; and**
   c) **Characterize the outcomes and effectiveness of the changes.**

Aquaculture Program Guidance
(Section 309) Developed a Guidance Document on Coordinated Aquaculture Permitting, available at: http://web2.uconn.edu/seagrant/publications/aquaculture/permitguide.pdf

Aquaculture Brochure
(Section 306)This brochure was published and made available to the general public in February 2009. Since such time, this brochure was emailed to various individuals involved with the aquaculture permitting process as well as those specifically requesting copies of it. This brochure is available to the general public upon request. The brochure has been effective at providing existing, new and prospective producers a better understanding of the laws, policies and permitting procedures applicable to marine aquaculture in CT. It provides an overview of

the regulatory authorities and outlines the permitting requirements. The brochure can be found at:
http://www.ct.gov/dep/lib/dep/long_island_sound/coastal_management/aquaculture_brochure.pdf

Aquaculture Permitting Workgroup

(Section 306) Partnering to streamline the Permitting Process for Aquaculture Permitting has become complex and challenging to the producer and resource managers. To address this problem, a workgroup composed of the Connecticut Department of Environmental Protection-Office of Long Island Sound Programs; Connecticut Department of Agriculture, Bureau of Aquaculture; US Army Corps of Engineers and CT Sea Grant, was formed. This workgroup is tasked with streamlining the process, producing educational resources on the process for producers and other stakeholder groups, and addressing concerns about the effects of shellfish and shellfish aquaculture on the environment in CT. This group works collectively with permit staff, federal agencies, state agencies, and local universities to address concerns of the aquaculture industry and associated resource managers. DEP is part of this workgroup that meets monthly (which includes local, state and federal agencies involved in aquaculture permitting decisions) to review the current policies and application processes in aquaculture to develop a more streamlined, straightforward permit application process.

The regulatory process for marine aquaculture and research involving aquatic organisms in Connecticut involves application review by local (municipal shellfish commissions-advisory comments), state (Departments of Agriculture and Department of Environmental Protection) and federal agencies (U.S. Army Corps of Engineers in cooperation with the National Marine Fisheries Service and the Environmental Protection Agency). As such, the process can become complex and burdensome if the applicant does not understand what is expected of them when completing an application. This has led to permitting delays, which are costly to producers, researchers and regulatory agencies. In an effort to prevent delays and reduce the time to acquire the necessary permits, the Connecticut Aquaculture Permitting Workgroup has developed several educational materials to inform applicants of the requirements of the various types of aquaculture permits and licenses. A publication entitled "A Guide to Permitting Marine Aquaculture in Connecticut" contains detailed information on the various types of marine aquaculture permits and review processes, and contains links to relevant state statutes. A fact sheet has also been produced which describes the licensing process for individuals conducting research with aquatic organisms.

These products are available from Seagrant online at:
http://web2.uconn.edu/seagrant/whatwedo/aquaculture/index.php - click on "Permitting and Policy"

(Section 309) Complete permitting guidance is available in the *Guide to Permitting Marine Aquaculture in Connecticut* available at:
http://web2.uconn.edu/seagrant/publications/aquaculture/permitguide.pdf.

Aquaculture Conference

(Section 306) Members of the Aquaculture Permitting Workgroup presented a talk on "Navigating the Permitting Process for shellfish aquaculture and related activities in Long Island Sound" at the 30th Milford Aquaculture Seminar held on February 8-10, 2010. This presentation

focused on policy changes relating to importing and transplanting shellfish for commercial and other purposes and the permitting of structures in Long Island Sound.

Members of the Aquaculture Permitting Workgroup developed and presented a poster on regulatory guidance and provided an overview of the educational materials available to the general public at the poster session at the Milford Aquaculture Seminar on February 24, 25 and 26, 2009. These resources were developed as part of an initiative to streamline the aquaculture permitting process for applicants.

General Permit for Aquaculture

(Section 309) The Office of Long Island Sound Programs is developing a general permit for the approval of minor aquaculture activities, including the placement of cultch, that have only minimal adverse environmental impact when conducted individually or cumulatively. A draft of this general permit has been circulated to a small group internally within OLISP as well as with the Aquaculture Permitting Workgroup to facilitate discussion and to receive comments. Based on the outcome of these discussions, OLISP staff will internally finalize the general permit for public notice and hearing.

The general permit is being developed in lieu of a formal regulation adoption process, and will be issued under the authority of section 22a-361(d) of the Connecticut General Statures. No registration will be required to be submitted so long as the proposal meets the criteria outlined in the general permit, which will assist potential applicants by clarifying the jurisdictional and regulatory requirements by including specific siting and design suggestions so as to render aquaculture applications consistent with the relevant enforceable policies of the Connecticut coastal management program.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be address through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Disease and release are significant threats- No aquaculture facility should be rearing aquatic organisms without treating the effluent unless nothing is added and stocks are native.	Policy, data, training, communication and outreach.	H
Balance competing uses	Communication and outreach	M
Education on policies/laws/regulations	Policy, data, training, communication and outreach	M
Public perception of aquaculture	Outreach, communication, regulatory	M

Investigate the impacts of shellfish dredging	Training, communication, outreach, research	M
Technological tools to better manage aquaculture	More data is needed- National Marine Fisheries Service (NMFS) is currently researching this	M
Continued collaboration and partnering with academic, federal, state and local institutions	Training/outreach/data/education	M
Contingency plans in the event of a disaster (i.e. oil spill, hurricane, etc.)	Regulatory, policy, data, training, capacity, communication and outreach	M
Harmful algal blooms	More research and data collection is needed for the effect of such blooms in Long Island Sound along CT's shores	M

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

High _____
Medium ___X___
Low _____

Briefly explain the level of priority given for this enhancement area.

Shellfish production currently represents the largest segment of the aquatic farming industry in Connecticut. In fact, the state's largest farms are underwater and encompass greater than 77,000 acres of leased and franchised shellfish grounds managed by the State Department of Agriculture. As such, a balance of the Public Trust waters must be achieved which incorporates aquaculture projects and farms.

2. Will the CMP develop one or more strategies for this enhancement area?

Yes _____
No __X__

Briefly explain why a strategy will or will not be developed for this enhancement area.

A specific strategy has not been developed for aquaculture. However, through the marine spatial planning strategy siting of aquaculture farms and guidance regarding carrying capacity should be considered. Utilization of this planning tool could produce data and analysis that could ultimately create sustainable education, research and outreach projects. This data could then be disseminated utilizing GIS information.

IV. STRATEGIES

1. Dredged Material Management Guidance

I. Issue Area(s)
The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☐ Coastal Hazards
- ☒ Ocean/Great Lake Resources
- ☐ Special Area Management Planning
- ☒ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

II. Program Change Description
A. The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☐ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

B. OLISP is continuing to follow through with a previous 309 strategy, participating in the development of the LIS Dredged Material Management Plan (DMMP), which is now making progress after several years without funding. Once the DMMP is finalized and adopted by the Corps of Engineers as expected in 2013, it will be necessary for OLISP to develop and adopt policies and guidelines that implement the goals of the adopted plan in a practicable manner. Although it is anticipated that greater emphasis will be given to beneficial use of dredged sediments, it is likely that open water disposal will not be eliminated as a disposal option. Therefore, OLISP will need to address this eventuality, by providing detailed technical guidance for dredging project proponents and cooperating agencies on how to select and implement appropriate dredged material management options. This strategy will result in changes to enforceable policies regarding the best approach for dredged material disposal in light of the then-existing regulatory context.

III. Need(s) and Gap(s) Addressed

Maintaining and protecting the ability to dredge navigation channels, and thus to dispose of the dredged sediments, is vital to preserve the water-dependent terminals and recreational marinas that constitute essential coastal uses and contribute an estimated $5 billion a year to the CT economy. The most prevalent sediment management option in Long Island Sound, open water disposal, has become somewhat controversial in recent years due to presumed water quality and habitat impacts, and has been objected to by New York's coastal management program (NY DOS) and by certain environmental groups. On the other hand, beneficial reuse of dredged sediments has often been stymied by the expense of handling and by complex upland regulatory standards. One of OLISP's previous dredging-related 309 projects, the development of a general permit for beneficial reuse, could not be completed for these reasons. Nonetheless, for Connecticut to maintain its maritime uses after adoption of the DMMP, OLISP must work to ensure that all appropriate disposal options are available. Eliminating the open water disposal option in particular would result in serious economic impacts to many port, marina and boatyard facilities and will exacerbate economic pressures to convert these water-dependent uses to non-water dependent uses such as residential or commercial development, threatening the continued existence of Connecticut's working waterfronts.

IV. Benefit(s) to Coastal Management

The EPA Site Designation EIS for the Central and Western Long Island Sound dredged material disposal sites found that open water disposal of dredged sediments in LIS did not result in long term impacts to water quality, existing uses or living resources in LIS, and was an environmentally sound sediment management option. While DEP promotes beneficial use of dredged sediment whenever and wherever practicable, open water disposal in some cases is still the most practicable management option. Guidance that will support maintaining the ability to utilize all appropriate disposal methods will be vital to preserve dredging dependent water dependent uses such as marine terminals and marinas, as discussed above.

V. Likelihood of Success

Assuming the DMMP is completed on schedule, the probability for success in developing dredged material guidance is very high. Connecticut's marine trades organizations are very active in advocating for dredging needs, and can be expected to readily support a strategy to preserve dredged material disposal options. Both DEP and the CT Department of Transportation, which oversees ports and waterways, while actively seeking beneficial use opportunities, recognize and support the need for a full range of disposal options. Maritime stakeholders all appear to realize that completion of the DMMP by the Corps in and of itself will not protect Connecticut maritime interests, especially with regard to open water disposal, lending significant support to this strategy. However, dredging needs and maritime commerce in general are not high-profile issues on the state level; accordingly, OLISP will also work with legislative and Administration officials and conservation oriented NGOs on the ongoing dredging needs of the water-dependent facilities as well as the well defined environmental and economic benefits derived from this sector

VI. Strategy Work Plan

Total Years: 4

Total Budget: $267,000

Final Outcome(s) and Products: Officially adopted guidance documents on procedures for appropriate disposal of dredged materials in Long Island Sound

Years: 1 and 2
Description of activities: Continue to participate in DMMP development, coordinating with maritime community, environmental groups, and other agencies such as the Long Island Sound Study, CT DOT, and NY DOS; work within Department to identify regulatory and technical obstacles to promoting beneficial reuse of dredged sediments
Outcome(s): Continued identification of state and federal regulatory impediments to potential management alternatives and possible legislative changes, scoping research initiatives and reviewing reports on available management options, provide information and data needed to complete DMMP tasks, and review and comment on DMMP deliverables. Begin participation in facilitated stakeholder workgroups to evaluate potential management options derived from the preceding reports for inclusion into the LIS DMMP
Budget: $52,000 annually

Year: 3
Description of activities: Review DMMP if completed; if not, continue to participate in DMMP development; coordinate with stakeholders such as CMTA, LISS, educate environmental groups; confer with NY DOS to pursue areas of common ground in DMMP implementation; assess anticipated dredging needs and evaluate availability of open water and upland disposal sites; begin development of guidance for permit applicants on DMMP implementation, with special attention to open water disposal procedures.
Outcome(s): Analysis of DMMP compared to dredging needs and disposal options, outline of guidance document.
Budget: $80,000

Year: 4
Description of activities: Revisit general permit for beneficial reuse, in conformance with DMMP provisions; Develop dredging implementation guidance and apply it through official findings of the Commissioner in permit proceedings, directives or otherwise; prepare formal outreach materials.
Outcome(s): Dredged material guidance documents formally adopted; general permit drafted
Budget: $83,000

VII. Fiscal and Technical Needs

A. Fiscal Needs: The requested amount of 309 funding should be sufficient to carry out the proposed strategy.

B. Technical Needs: In conjunction with cooperating state and federal agencies as necessary, OLISP staff currently have sufficient technical knowledge and skills to carry out the proposed strategy.

2. Coastal Storm Event Response

I. Issue Area(s)
The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☒ Coastal Hazards
- ☐ Ocean/Great Lake Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

*Although Marine Debris is identified as a low priority for Connecticut, the strategy will overlap into this area.

II. Program Change Description
A. The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☐ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

B. Three program changes are proposed as a part of this strategy to address the issue areas.

1. Issuance of two general permits pursuant to Section 22a-361(d) of the Connecticut General Statutes. One would address issues of repair and shoring of structures in advance of a predicted severe storm. The other would address repair and rebuilding of structures in the aftermath of such a storm. It is likely that no statutory changes would be required to accomplish this program change, as most of the anticipated work would likely fall in one of the permissible categories. An assessment of the types of activities needed to have a fully functional general permit would be required at the onset of the project in order to assess the need for such statutory change.
2. Development of a policy document for issuance of emergency authorizations to address issues that could not be covered by a general permit. An assessment of the need for statutory

changes to the statutes covering emergency authorizations would be a part of the preparation of this document.

3. Development of a guideline for publication on the website explaining how the various regulatory tools for preparing for and recovering from a significant hurricane work together to cover the needs of the regulated community.

III. Need(s) and Gap(s) Addressed

This strategy will address the Coastal Storm Event Preparedness need which has been ranked as high in the assessment. This strategy is the most appropriate way to address this priority need because it allows flexibility in relying on several different existing statutory authorities to accomplish the desired outcome. The key to coastal storm readiness and response is speed. In many cases, leaving damaged property unaddressed will lead to additional property damage, potentially to surrounding properties as well.

IV. Benefit(s) to Coastal Management

The benefits to coastal management are numerous. Prevention of property damage and expedited repairs when such damage occurs will prevent debris and sedimentation from entering areas of coastal resources. Marine debris that gets trapped in an area such as a tidal wetland is often never removed once flood waters recede, causing significant cumulative damage to these areas. Sedimentation and debris from failing structures can be deposited in wide areas on the sea floor, causing impacts to fisheries and other aquatic flora and fauna. In the absence of a rapid response to property concerns, many violations of the state's regulatory statutes can occur as the property owners conduct regulated activities without permits. This can lead to short-term and long-term impacts to coastal resources as there is no decision-making process that precedes such activities. In addition, the issuance of general permits and policies for the issuance of emergency permits will enable conditions of such authorizations to be identified and included which will prevent significant impact to coastal resources.

V. Likelihood of Success

This strategy has a high likelihood of success. A statutory framework already exists to enable the program changes. Even if additional statutory modifications are identified to fully address the issues, if those modifications fail to be implemented, a significant portion of the strategy would still move forward. Because climate change adaptation is high on the state's priority list, this strategy meets the criteria for a project which will garner support at the highest levels. In addition, economic recovery is an important part in every legislative decision-making tool. The streamlining of authorizations for prevention and repair of property damage will economically benefit the regulated community, which includes private homeowners, business owners, and state and local governments, as well as the trade associations connected to such civil works.

VI. Strategy Work Plan

Total Years: 3

Total Budget: $220,000

Final Outcome and Products: Two general permits authorizing reconstruction of storm-threatened or damaged structures; officially adopted guidance documents for implementing emergency authorizations and general permits.

Year: 1
Description of Activities: Internal team to develop outline of specific needs to be addressed in the general permits, review of existing statutory categories to determine if any statutory modifications will be requested, drafting of general permits, internal comments and redrafting. Internal team to develop outline of policy document for the issuance of emergency authorizations. Review of statutory requirements to determine if modifications will be requested. Initial drafting of policy. Coordination with other state agencies as well as federal agencies.
Outcome(s): Draft permits ready for public comment, Draft emergency authorization policy for internal review
Budget: $82,000

Year: 2
Description of Activities: Public notice and hearing on permits, response to comments and redrafting as necessary. Revisions as needed on emergency authorization policy, Final Draft for commissioner's review. Initial draft of Hurricane Regulatory Response guidelines.
Outcome(s): Final general permits, Final Emergency Authorization Policy, Draft Guidelines
Budget: $82,000

Year: 3
Description of Activities: Internal review and comments on guidelines, redrafting as necessary. Final drafting of guidelines. Outreach as necessary.
Outcome(s): Final guidelines published on the web site.
Budget: $56,000

VII. Fiscal and Technical Needs

C. Fiscal Needs:

309 funding should be sufficient to carry out all of these activities.

D. Technical Needs:

The state currently possesses all of the skills necessary to carry out the proposed strategy.

3. Shoreline Change Guidance

I. Issue Area(s)
The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☒ Coastal Hazards
- ☐ Ocean/Great Lake Resources
- ☐ Special Area Management Planning
- ☐ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

II. Program Change Description
A. The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☐ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☐ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

B. Three program changes are proposed as a part of this strategy to address the issue areas.

1. Development of an internal policy document providing a toolkit for the CZM program to more effectively (e.g., geographically, spatially, and quantifiably) incorporate the existing and potential effects of shoreline change in adaptive regulatory and planning decisions. The policy document will rely on the development of new data characterizing the nature of shoreline types and erosion values along Connecticut's coast as well as a list of shoreline management options.
2. Development of a easy to read guideline for publication on the website demonstrating the nature of shoreline erosion management by identifying areas of varying risk (historically and/or potentially) with examples of appropriate existing and potential management options to allow the public to better understand what options may be suitable to its needs.
3. Development of a guidance document for determining the location of the high tide line. This will also include an evaluation of the need for possible statutory changes to the statutory definition of the high tide line.

III. Need(s) and Gap(s) Addressed

This strategy will address the Shoreline Erosion need which has been ranked as high in the assessment. Currently there is a lack of modern and defensible information on shoreline erosion in Connecticut and there is no consistent, well-defined way in which any existing shoreline classification and change data can be incorporated into the regulatory and planning frameworks. This will address this priority need by:

- using existing sources of data to delineate current areas of shoreline change as well as areas that may be affected in the future as the result of climate change;
- classifying the CT shoreline based on types of shoreline (open shore, man-made, etc.)
- making available current information on the location, extent, and classification of shoreline types and an inventory and assessment of traditional and innovative management options
- evaluating and developing guidance on regulatory and planning approaches for shoreline management.

IV. Benefit(s) to Coastal Management

When managing a dynamic resource such as a shoreline upon which a substantial amount of coastal structures, development, and resources directly impact or are impacted by, having current, well-vetted information is crucial to make consistent and credible decisions. The benefits this strategy can provide include, but are not limited to:

- Providing a quantifiable representation on the location and nature of shoreline change and removing ambiguity as to whether a perceived change is a trend or a no-net-effect;
- Classifying areas based on risk will lead to more effective and defensible means of mitigation and/or management options;
- Identifying areas of the coast at further risk to potential climate change impacts such as sea-level rise or a change in frequency/scale of coastal storms;
- Providing an inventory of the location and type of armored and man-made shoreline to serve as a baseline against which to measure future change;
- Providing better sources of information regarding what types of shoreline management strategies are most appropriate under certain scenarios will helps streamline processes and better manage expectations of the regulated community.

V. Likelihood of Success

This strategy has a high likelihood of success. A statutory framework already exists to enable the program changes, and it is not anticipated that any new data would need to be collected to create on updated set of erosion data; rather existing data would be compiled and analyzed which represents a comparatively less significant effort. Further, there is a natural tie-in to climate change adaptation planning, which is high on the state's priority list, so this strategy meets the criteria for a project which will garner support at the highest levels.

VI. Strategy Work Plan

Total Years: 3

Total Budget: $180,000

Final Outcome and Products: Official policy document and toolkit to incorporate shoreline change into planning and regulatory decisions; web-based publication on shoreline change guidance; official guidance document on determining the jurisdictional high tide line, or proposal to refine the statutory definition.

Year: 3

Description of Activities:

- Internal team assembled to plan and carry out shoreline data development tasks.
- Internal team assembled to research, inventory and assess shoreline management options.
- Internal team assembled to evaluate the high tide line definition and identification methodologies.

Outcome(s):

- Draft shoreline management options assessment complete
- 40% shoreline data delivered

Budget: $52,000

Year: 4

Description of Activities:

- Review and final draft of shoreline management options completed
- Review of 40% shoreline data delivery
- Continuation of remaining shoreline data development.
- Drafting policy document on high tide line. Recommend statutory changes, if needed.

Outcome(s):

- 100% of shoreline data delivered and reviewed
- Shoreline management options completed

Budget: $62,000

Year: 5

Description of Activities:

- Internal review and comments on internal policy documents and public guidelines, (integration of shoreline data and management options) redrafting as necessary.

- Final drafting of policy document and guidelines.
- Statutory changes proposed

Outcome(s):

- Policy Document approved and implemented.
- Final guidelines published on the web site.
- Legislative proposal on jurisdiction submitted

Budget: $65,000

VII. Fiscal and Technical Needs

E. Fiscal Needs:

Additional funding sources available within DEP will be used to supplement any additional needs beyond any allocated 309 funding.

F. Technical Needs:

While the state currently possesses all of the technical skills necessary to carry out the proposed strategy, it is anticipated that the data development tasks will be carried out by an appropriately qualified 3rd party selected in accordance with state purchasing guidelines.

4. Regional Coastal and Marine Spatial Planning

I. Issue Area(s)
The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☒ Energy & Government Facility Siting
- ☐ Coastal Hazards
- ☒ Ocean/Great Lake Resources
- ☐ Special Area Management Planning
- ☒ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

II. Program Change Description
A. The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☐ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

B. Description of Proposed Program Change:
As described in the last two 309 Assessments, the Connecticut Coastal Management Program continues to stand in need of an institutional capacity to manage offshore resources and submerged lands and waters on a spatial basis. While the 2006 Submerged Lands Management Strategy did not develop into the comprehensive management initiative that we had hoped, ocean resource management is becoming nationally important due to the National Ocean Policy with its focus on regional coastal and marine spatial planning.

Accordingly, OLISP now proposes to refocus its strategy within the framework of the National Ocean Policy and regional CMSP to create a capacity for CMSP within Long Island Sound as a bi-regional adjunct. OLISP will work closely with the Long Island Sound Study NEP, under the aegis of both NROC and MARCO, and reach out to non-governmental partners and stakeholders such as Connecticut Sea Grant, The Nature Conservancy, and other environmental groups to build capacity for coastal and marine spatial planning in Long Island Sound. OLISP's share in regional ocean management is expected to constitute or result in program changes for Connecticut's CMP. However, the progress of such an initiative in Connecticut will require the active participation and advocacy of Administration officials and legislative leaders, as well as stakeholder groups, so that it may be necessary to proceed by

first establishing some form of task force or advisory board to build support and develop recommendations for the CSMP program. Accordingly, this strategy is scheduled for the later years of the Assessment period to allow future CMSP developments to play out.
While specific strategy tasks cannot therefore be fully anticipated at this time, there will be three overall task areas:

- The establishment of a sub-regional LIS CMSP framework or institution, working through the Long Island Sound Study with NROC and MARCO, to distill larger-scale regional marine spatial plans down to the Long Island Sound level.
- Formulation and implementing a plan for the completion of seafloor mapping (sedimentary environments and habitats) and an assessment of uses and use areas of the Sound (e.g., where commercial fishermen trawl, what are the navigation routes of commercial traffic). Implementation of the mapping plan is an essential precondition to creating program changes in the form of management mechanisms based on the map data.
- Establishment of a Connecticut-specific spatial planning and management function to implement the LIS CMSP in Connecticut's coastal area. This will include not only consistency between the LIS CMS Plan and existing regulatory programs, but also a state-level program of submerged lands leasing or management based on the State's proprietary interest in public trust submerged lands and waters.

III. Need(s) and Gap(s) Addressed

A system of CMSP for Long Island Sound, and particularly for Connecticut waters, will ameliorate a number of institutional deficiencies that currently inhibit a comprehensive ecosystem-based management of our coastal resources and uses.

First, while Connecticut, the Sound, and the region all possess certain planning, management, and regulatory functions, none currently employ a spatial management component. As the National Ocean Policy has recognized on a national level, and as all our neighboring states have also recognized, a spatial orientation will be essential to apply resource and use data to address resource management and use conflicts. For instance, Connecticut lacks any entity or authority to recapture the benefits of private use by cables and pipelines of the State's public trust, or to resolve use conflicts or allocate uses of submerged lands affecting or affected by offshore energy facilities. In addition to energy and industrial facilities, priority existing and emerging use conflicts include private encroachments onto public trust lands; potential incompatibilities between in-water uses such as fishing, navigation, and aquaculture; and management of dredging projects and dredged material disposal, including long-term stewardship of disposal sites and CAD cells. A LIS CMSP initiative, based on current resource and use data and networked with regional ocean initiatives, can enable such management mechanisms as utility corridors and marine protected areas, validate the State's proprietary interests, and protect traditional navigational, fishing and aquaculture uses.

Second, Long Island Sound may fall within the gaps of the emerging national and regional CMSP framework. As a geographic entity, the Sound overlaps the edges of both the MARCO and NROC regions, and the map included within the Interim Framework report itself does not make clear whether the Sound is to fall within the Mid-Atlantic or Northeast Region. Long Island Sound differs from other areas within CMSP region not only in its regional overlap, but also in that it comprises entirely state waters within the baseline of the U.S. Territorial Sea, while the Interim Framework is oriented toward managing offshore areas, the OCS and beyond to the EEZ. Offshore areas present completely different

set of management issues and challenges than do the Sound's heavily-urbanized shores and shallow, crowded coastal waters. Accordingly, even as the projected system of Regional CMSP is forging ahead, Long Island Sound and particularly the Connecticut portion of that waterbody risks being left behind without its own CMSP capability.

IV. Benefit(s) to Coastal Management

The development and implementation of a Long Island Sound CSMP program will ultimately result in a more effective ecosystem-based plan for protecting and conserving ocean resources, promoting appropriate uses and resolving conflicts between competing uses. Each of the components of the strategy, even if they are not fully achieved, will create valuable enhancements to Connecticut's coastal management program. Seafloor mapping efforts will provide essential baseline resource and use data to enable a more informed planning/regulatory capacity for issues relating to energy facilities, dredged material management, sediment sources for beach nourishment, fisheries management, etc; the subregional CMSP arrangement will establish a management framework within which to apply this resource data, to efficiently allocate and balance the needs of different users with resource protection; and the state submerged lands management mechanism will provide a method of implementing the spatial plan, and at the very least will spur some debate over issues concerning Connecticut's proprietary authority over its public trust submerged lands and waters, as well as creating a legal basis for recapturing a portion of any profits made from industrial use of the State's coastal resources.

V. Likelihood of Success

As with the last Assessment & Strategy, much will depend on the level of engagement by legislative and Administration leadership, which is impossible to predict at this time. As exemplified by the Massachusetts Ocean Management Initiative, high-level sponsorship from both the Governor's Office and legislative leadership will likely be necessary. Whether or not this happens, and how it happens, is largely dependent on political considerations outside OLISP's control. However, the National Ocean Policy, Interim Framework, and potential federal funding opportunities should stimulate some attention, and the examples of Massachusetts, Rhode Island, and New York in ocean resource management will demonstrate that CMSP can be done. In addition, the costs of a CMSP strategy may be minimal for the state budget, especially if they can be recouped through a submerged lands leasing system. Nonetheless, since the actual form this strategy may take will depend on the inputs and perspectives of many other stakeholders, the strategy and the three subsidiary tasks—Regional ocean management, seafloor mapping, and submerged lands management—will be subject to revision depending on the progress of any potential legislative or programmatic initiatives. We will keep OCRM informed of any future developments in this area.

VI. Strategy Work Plan

Total Years: 5
Total Budget: $352,000
Final Outcome(s) and Products: Establishment of a Long Island Sound sub-regional CMSP framework or agreement; enhanced seafloor mapping portfolio; Connecticut-specific spatial planning and management mechanism.

Years: 1 and 2
Description of activities: Begin work on seafloor mapping (developing project scopes of

work/contracts, organizational and coordinating efforts, initiating project management/oversight, initial data QA/QC); working with NERACOOS, coordinate seafloor mapping data with regional data portal; continue involvement with NROC on regional CMSP development and issues.
Outcome(s): Seafloor mapping products (formalized statements of work, signed partner MOUs/contracts, initial seafloor mapping data collection needed to develop benthic habitat maps); improved coordination with regional stakeholders and input into regional CMSP
Budget: $52,000 annually (309 funds dedicated to indirect costs only. Any direct costs will be borne by other funding sources as appropriate.)

Year: 3
Description of activities: Continue contract work on seafloor mapping (on-going project management/oversight, on-going data QA/QC): initiate formal contacts with LISS, NROC, MARCO, NY DOS, and other federal and regional partners to establish LIS sub-regional CMSP framework; work with Connecticut legislative and Administration officials to develop a vehicle for promoting CMSP recommendations through a task force, Blue Ribbon commission or other mechanism.
Outcome(s): Seafloor mapping products (seafloor mapping data needed to develop benthic habitat layers, draft benthic habitat maps); agreed outline of LIS CMSP framework; develop state-level proposals for CMSP mechanism.
Budget: $80,000 (309 funds dedicated to indirect costs only. Any direct costs will be borne by other funding sources as appropriate.)

Years: 4 and 5
Description of activities: Continue contract work on seafloor mapping (on-going project management/oversight, data QA/QC, data delivery/distribution/cataloguing in coordination with regional data portals and other resource information institutions); adopt and implement LIS CMS plan through LISS/NROC/MARCO workshops, meetings and coordination; develop specific proposal for Connecticut-specific CMS management mechanism and initiate efforts to enact it; adopt and implement CT CMS/submerged lands management program or mechanism.
Outcome(s): Integrated seafloor mapping and marine spatial data (finalized benthic habitat maps, all supplemental data used to create them, data documentation, data delivery mechanisms); officially-adopted LIS sub-regional CMS plan; adopted or fully-developed Connecticut marine spatial management mechanism.
Budget: $84,000 annually (309 funds dedicated to indirect costs only. Any direct costs will be borne by other funding sources as appropriate.)

VII. Fiscal and Technical Needs

G. Fiscal Needs:

The limited amount of 309 funding available to Connecticut will not be sufficient to cover all of the necessary indirect costs (e.g., staff salaries) to pursue this strategy but OLISP anticipates using section 306 CZMA funds and associated state match funds as necessary. We expect that other funding sources such as the Long Island Sound Cable Settlement funds, 306 funds and various state funds will be used to cover direct costs such as contracts for discrete tasks involving mapping and other data gathering/analysis services. Further funding details regarding this strategy will be provided on an ongoing basis in OLISP's annual grant applications.

H. Technical Needs:

In conjunction with cooperating state and federal agencies as necessary, OLISP staff currently have sufficient technical knowledge and skills to carry out the proposed strategy.

VIII. Projects of Special Merit (Optional)

OLISP may wish to undertake a PSM for a particular spatial planning initiative, such as habitat mapping or water use mapping, to serve as the basis for a marine spatial plan.

Five-Year Budget Summary by Strategy

Strategy Title	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
LIS DMMP	52,000	52,000	80,000	83,000		267,000
Storm Event Preparedness	82,000	82,000	56,000			220,000
Shoreline Change Guidance			52,000	62,000	65,000	180,000
LIS CMSP	52,000	52,000	80,000	84,000	84,000	352,000
Total Funding	186,00	186,000	268,000	229,000	149,000	1,019,000

V. PUBLIC REVIEW

On October 6, 2010, Connecticut published in six major shoreline newspapers a public notice soliciting comments on the draft assessment and providing a 30-day review period. The public notice and the entire Assessment and Strategies document were also posted on the DEP Long Island Sound web page as a PDF file under Featured Links (http://www.ct.gov/dep/lis). The web-based notice and document received 88 hits during the comment period, which ended on November 5, 2010.

In response to the public notice, OLISP received four comment letters from stakeholders, whose concerns in general were not specifically related to the substance of the draft Assessment and Strategies document. Responses were sent to each of the commenters, and both the comment letters and responses are attached at the end of this document and summarized below.

Comments on the Draft Assessment and Strategies

Robert B. Taylor, Loureiro Engineering Associates, Inc., November 5, 2010
Mr. Taylor's letter contained a number of comments regarding the Department's stormwater general permits, which are administered by the Bureau of Materials Management and Compliance Assistance and do not relate directly to Connecticut's coastal management program.

Norwalk Harbor Management Commission, November 12, 2010; Connecticut Harbor Management Association, November 14, 2010
Each of these letters made similar points regarding OLISP's role in federal maintenance dredging

process. The commenters suggested that OLISP shift its institutional position to become less of an environmental regulator and more of a dredging advocate and facilitator. OLISP responded to both commenters in a single letter explaining the appropriate role of OLISP and coastal management policies with regard to specific dredging projects and dredging generally.

Guilford Harbor Management Commission, November 15, 2010
Guilford's letter expressed a number of concerns about coastal erosion, based on a misunderstanding due to awkward wording in the Draft Assessment's discussion of flood and erosion control structures. OLISP corrected the wording and explained that coastal management policies regarding erosion control had not changed.


309 Comments 2010.pdf