Coastal Zone Management Act
Section 309 Enhancement Grants Program
Assessment and Strategy

December 2010

New Hampshire Department of Environmental Services
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Section 309 Enhancement Grants Program
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INTRODUCTION

Section 309 of the Coastal Zone Management Act (CZMA), as amended in 1990 and 1996, establishes a voluntary coastal zone enhancement grants program to encourage State and Territory Coastal Management Programs (CMPs) to develop program changes in one or more of nine enhancement areas. Under this program, the Secretary of Commerce is authorized to make awards to states and territories to develop and submit for federal approval, program changes that support attainment of one or more of the enhancement area objectives. Section 309 further requires that the Office of Ocean and Coastal Resource Management (OCRM) review, in close cooperation with CMPs, their priority management needs and evaluate proposed strategies.

In 1991, as part of instituting an Enhancement Grants Program in New Hampshire, the state conducted a detailed assessment of the New Hampshire Coastal Program (NHCP) using public input and other resources. This assessment prioritized needed NHCP improvements by identifying Wetlands Protection and Restoration as well as Cumulative and Secondary Impacts of Development as New Hampshire's two priority coastal issues. A five-year Strategy document to serve the state through Federal Fiscal Year (FFY) 1995 was then developed that identified specific projects for addressing these priority issues. Each project was designed to lead a program change that New Hampshire would seek to implement.

The Strategy was revised in 1994, 1996, 2001 and 2006. Cumulative and Secondary Impacts of Development as well as Wetland Protection and Restoration remained the two priority coastal issues throughout these revisions. New Hampshire's 2011 revision of the Section 309 Assessment and Strategy identifies Wetland Protection and Restoration, Coastal Hazards, Cumulative and Secondary Impacts of Development, and Ocean/Great Lake Resources as high priority issues.

Priority issues and strategies for this Assessment were determined through a comprehensive strategic planning process undertaken by the NHCP during the summer and fall of 2009. Stakeholders and partners were involved in this process through personal interviews and written surveys. Facilitated workshops helped NHCP staff translate this input into priority issues and long-term strategies for the NHCP as a whole. The planning process also identified priority issues and strategies for the Section 309 Program for the next five years.

Additional support for priorities and strategies for this Assessment came through the Piscataqua Region Estuaries Partnership (PREP), which is currently (2010) updating its Comprehensive Conservation and Management Plan (CCMP). Because the CCMP is based on input from stakeholders and prioritizes issues and strategies, it too serves to guide Section 309 activities.

After the 2011 draft of the Section 309 Assessment and Strategy was completed, a 30-day public comment period was held. Partners and stakeholders were also invited to comment, including numerous agencies and organizations. Comments from partners and stakeholders reflected general support . Some partners made suggestions for improved coordination with the regional planning commissions and Piscataqua Regional Estuary Parternership. NOAA-

OCRM's comments were extremely helpful in clarifying anticipated program changes in the Ocean Resources, Wetlands, and Cumulative and Secondary Impacts areas.

SUMMARY OF PAST SECTION 309 EFFORTS

Over the past years, the Section 309 program has largely been focused in two areas, wetlands and cumulative and secondary impacts of development. Within the area of wetlands, the NHCP has had a strong effort on wetland restoration. Prior to 2006, that effort was oriented on salt marsh restoration. Since that time, the program has reoriented itself on river restoration and invasive species control.

Restoration and Invasive Species Control

Winnicut Dam Removal and Fish Passage Project

Project Objectives:

The object of the project is to restore diadromous fish habitat to the Winnicut River, by removing the head-of-tide Winnicut River Dam and by installing a technical fish passage system beneath the State Route 33 Bridge. This project will restore riverine ecosystem conditions (i.e., fish passage, instream spawning and nursery habitat, intertidal wetlands, water quality, sediment transport, etc.). Project start date: 7/29/09.

Project Description:

The current Canadian step-weir fish ladder on the Winnicut Dam is not effective for upstream passage and provides no downstream passage for diadromous fish species. This dam removal and fish passage improvement project will improve upstream and downstream migration for diadromous fish including: river herring (alewives and blueback herring), American eel, and rainbow smelt. Some of these species are listed as "Species of Concern" for both National Marine Fisheries Service and NH Fish and Game Department. Uninhibited river flow will improve water quality for spawning and nursery areas utilized by diadromous species. In addition, 250 linear feet of intertidal smelt spawning habitat will be restored and 6,500 ft^2 salt marsh habitat will be created. Salt marsh habitat is a habitat of "special concern" within New Hampshire.

The proposed work includes: installation of fish pass system under the NH State Route 33 Bridge, removal of the Winnicut Dam and adjoining fish ladder, and site restoration. In addition to the three aforementioned tasks, the following auxiliary features are required; either because of permit conditions or to replace features lost as a result of project implementation: a) Relocate USGS stream gauge; b) Create new public access boat launch upstream of Route 33; c) Install a dry hydrant to replace water supply for municipal fire suppression; d) Section 106 mitigation requirements (Install a 3 panel interpretive sign, install a bronze plaque memorializing the Winnicut Dam and fish ladder, and document the Winnicut Dam according to standards established through the Historic American Engineering Record). As of the writing of this report, the dam has been removed and fish are able use the entire river for the first time in over 50 years.

Little River Phase II – Design and Construction

Project Objectives:

The Little River Phase II salt marsh restoration project is part of an adaptive management strategy that began after a major tidal restriction was removed in 2000. The objective of this most recent project was to restore tidal connectivity to the upper reaches of the southern portion of Little

River marsh (aka Garland Brook) by excavating approximately 2,000 ft of tidal channels. These restored channels will allow fish access to landward habitats that are currently restricted and will allow for better freshwater run-off, both of which will alleviate the mosquito problems in the area. Project start date: 10/22/08.

Project Description:

The Little River Salt Marsh is a back barrier marsh lying between Little Boar's Head in North Hampton and a rocky headland just south of North Shore Road in Hampton. In 2000, after a century of degradation, tidal exchange was restored to the Little River salt marsh when two failing pipe culverts were replaced with twin 6'x 12' box culverts.

In 2004, the NHCP initiated a Feasibility Study to assess current conditions and to identify options for advancing the trajectory of restoration at the Little River salt marsh. The Phase II F.S. assessed the following parameters at three sites on the marsh: base elevation maps (upland edge, creeks, ditches, and pools), soil toxicity, groundwater levels, soil salinity, water level, nekton, water quality, vegetation, and mosquito breeding.

The feasibility study, published in 2006, found that the Little River salt marsh has been reverting to a salt marsh plant community, but the unrestricted tidal flow has not yet restored a balanced ecosystem. Current conditions on the upper reaches of the salt marsh (e.g. poorly drained areas with dead vegetation) have led to increased mosquito breeding habitat with resultant problem mosquito populations. "Now that the tidal prism has been restored to the marsh, tidewater percolates through the hummock and hollows, but there are limited opportunities for fish access. As the tide enters into a neap cycle, large areas of water remain trapped in the hollows and natural depressions allowing for mosquito breeding," (Reilly et al., 2006).

The feasibility study presents several restoration practices to advance the trajectory of restoration objectives including: removal of dead standing wood; re-establish tidal channels, remove existing berms; control phragmites; and create pools. A steering committee composed of the agency representatives and additional landowners have reviewed the feasibility study and determined an implementation strategy for the next phase of restoration.

Hampton Seabrook Estuary Restoration Compendium
Project Objectives:

The Hampton-Seabrook Estuary Restoration Compendium provides practitioners and communities access to the best available information on restoration needs and opportunities. The final product is a series of maps and an executive summary describing the data and identifying restoration opportunities in the Hampton Seabrook Estuary. Project start date: 10/8/08.

Project Description:

The Hampton-Seabrook Estuary is a shallow, tidally dominated, barrier beach system. The watershed encompasses 47 square miles and includes the towns of Hampton, Hampton Falls, North Hampton, Stratham, Seabrook, Exeter, and Kensington, NH and Salisbury, Mass. The Estuary receives freshwater inputs from Tide Mill Creek to the north, the Taylor and Hampton Falls Rivers from the northwest, Brown's River and Cain's Brook from the west, and the Blackwater and Little Rivers from the south. Unlike the Great Bay Estuary, the Hampton Seabrook Estuary is dominated

by salt marsh habitat. In fact, the Estuary contains over 4,000 acres of tidal marsh. In addition, the Estuary supports many other important coastal habitats including the most productive softshell clam beds in the state, important roosting, feeding and nesting grounds for shorebirds and salt marsh sparrows, as well as remnant sand dunes. As a result of the important ecological services provided by the Hampton-Seabrook Estuary, it was listed as a conservation focus area in The Nature Conservancy's Land Conservation Plan for New Hampshire's Coastal Watersheds (Zankel et al. 2006).

The Hampton-Seabrook Estuary Restoration Compendium is a compilation of information on the historic and current distributions of salt marsh and sand dune habitats and diadromous fishes within the Hampton-Seabrook Estuary watershed. These habitats and species groups were selected due to the important ecological role they play within the watershed and with effective restoration and conservation efforts, will continue to play. Other ecologically important habitats and species, such as avifauna, shellfish and eelgrass beds, currently are or historically were present within the watershed. Shellfish and seagrass are recognized as important habitats within the Estuary, but were not included in the current report because a different analytical approach may be required for such dynamic and/or short-lived species. A recent report by the New Hampshire Audubon Society details modern bird use of the Hampton-Seabrook Estuary (McKinley and Hunt 2008).

Restoration opportunities have been identified within the watershed by evaluating habitat loss and changes in land use over time. Restoration opportunities are not prioritized in order to allow the goals and objectives of each restoration practitioner to govern project selection. However, in accordance with an ecosystem-based approach to restoration, areas containing multi-habitat restoration opportunities are considered to be of the highest priority. Furthermore, restoration efforts should ensure processes critical for the support of restored components are maintained or reestablished. The goal of the Compendium is to identify restoration opportunities within the watershed derived from data on habitat change. Many other factors exist that are important in the identification and selection of restoration projects, including water quality and non-point source pollution, water withdrawal, harbor maintenance, recreational impacts, human history, and socioeconomic factors, among others. Although information regarding these factors is not explicitly included in this analysis, these factors must be considered and addressed as they may limit the potential for success in specific restoration efforts. A series of maps were created that detail changes in the extent of sand dune and salt marsh habitats over time, the current and historic distribution of seven diadromous fish species, and restoration opportunities within the Hampton-Seabrook Estuary and watershed. A narrative describes the methods used, the results of analyses and examples of prominent restoration projects. Each major section concludes with references used in the narrative and maps. The maps are available for viewing as portable document format (pdf) files. For those with GIS capabilities, the ArcMap 9.2 project files, are available as well. The underlying concept and methods for the Compendium stem from a previous project conducted within the Great Bay Estuary, the Great Bay Estuary Restoration Compendium (Odell et al. 2006).

Exeter Great Dam – Water Supply
Project Objectives:

The objective of this project was to determine the feasibility of the Town of Exeter replacing the water supply provided by the Great Dam impoundment if a dam removal were to occur. Project start date: 5/6/09.

Project Description:

The Town of Exeter utilizes water impounded from the Exeter River by the Great Dam as a primary drinking water source during the summer months of the year. The Town owns and operates the Great Dam and has recently conducted studies to investigate options for improving the dam flow capabilities, structural integrity and fish passage. The Great Dam is a head-of-tide barrier to fish passage. While the dam has a fish passage facility, it has been challenging to manage due to the required levels of water flowing over the spillway and the efficacy of the passage facility itself. More troubling is the condition of the water in the impoundment. In 2004, the impoundment was listed on the 303(d) list to Congress as impaired for Dissolved Oxygen (DO). Many times during summer flows, the river become hypoxic in the impoundment. Work completed in 2007 showed that the cause of this impairment is biological and chemical reactions within the impoundment. This means that improving the water quality within the impoundment is going to be very difficult without major changes to nutrient inputs from higher up in the watershed. While efforts are currently underway to reduce nutrient loading, that is a long-term process.

Meanwhile, herring returns in the Exeter River have been plummeting over the past few years. Herring (alewives and bluebacks) are declining nearly to zero. Herring numbers on the Exeter River improved significantly after ladder improvements in 2001. However, in 2007, only 40 herring were counted in the Exeter River. "This indicates that the problem is most likely not with the ladder but with the spawning run, recruitment, and possibly flow regime," (Eberhardt and Burdick, 2009). The DO level in the impoundment is speculated to be a significant issue. Management of water levels over the dam has also been an issue due to flooding concerns upstream.

The Exeter River also is part of a major shad restoration initiative within the state. The Merrimack River and the Exeter River are stocked with shad. However, this stocking program has recently been scaled back due primarily to the problems of flood conditions at the time of migration and the ability for the dams to pass fish downstream. The Exeter River has been part of the shad restoration for 20 years because it is thought to have the best shad spawning conditions in the Great Bay system. A dam removal could greatly assist in that effort.

Finally, the Squamscott River is the tidal section of the Exeter River. It is home to the best rainbow smelt spawning area in New Hampshire. A dam removal should benefit the smelt population in two ways, first it will help to allow flushing of the area below the dam which will lessen sedimentation in spawning beds and second, it will improve water quality to those beds. American and Lamprey eels will benefit from the project.

A removal of the Great Dam in Exeter, NH would open up 14.3 miles of mainstem river miles to free and open passage. The next barrier is the Pickpockit Dam which has excellent fish passage. Free passage through the Great Dam and good management of the fish ladder at Pickpocket Dam allows for fish to utilize up to 104 miles of stream and rivers throughout the lower part of the Exeter River watershed. DES has a project underway in the Exeter River watershed to assess the culverts and stream crossings to determine their ability to pass floodwaters and fish. DES is working closely with the towns in the watershed to prioritize problem culverts for replacement.

Early Detection- Rapid Response Initiative on Perennial Pepperweed

Project Description:

Perennial pepperweed (Lepidium latifolium) is an aggressive non-native plant of the mustard family that is notorious for creating dense stands, out-competing native plant species, and destroying habitat for many species of animals. With only two known populations in NH, an early detection rapid response strategy is an effective means to stop its spread. New Hampshire's "Pepperweed Patrol" initiative builds upon a program established by the USFWS Parker River Wildlife Refuge.

NHCP Participation:

- Completed yearly assessment for presence of perennial pepperweed in Seacoast area. No new sites were detected. Survey routes were digitized in ArcGIS.
- Collaborated with Seacoast Youth Services to pull pepperweed at the Hampton Transfer Station. The pepperweed at Odiorne Point State Park was hand-pulled twice.
- Pepperweed regrowth was treated with a foliar application of Aquamaster© herbicide. Herbicide application is warranted at both sites next year.
- Presentations were given at conservation commission meetings for four coastal communities: Rye, Hampton, Hampton Falls, and Seabrook. The presentation was then adapted for public access television and was featured in Hampton and possibly other towns;
- Developed pepperweed fact sheet and a new "wanted" poster; and
- Perennial pepperweed was featured on one of WMUR's "Grow it Green" spots dedicated to the issue of invasive plants.

Cumulative and Secondary Impacts of Development

Southeast Watershed Alliance

As New Hampshire's coastal water resources face increasing pressures associated with population growth and development, the Southeast Watershed Alliance (SWA) is emerging as a forum for solutions. The SWA, established by RSA 485-E in the 2009 legislative session, is an inter-municipal organization dedicated to improving collaboration on water quality issues in N.H.'s coastal watershed.

The coastal watershed is the land area in New Hampshire that contributes groundwater, surface water and stormwater to the Atlantic coast and Great Bay estuary. Water bodies within this watershed include the Squamscott, Lamprey, Oyster, Bellamy, Cocheco and Salmon Falls Rivers; Great Bay, Little Bay and the Piscataqua River; and the Hampton-Seabrook Estuary. These water resources are increasingly subject to pollution, including loads from nonpoint sources, such as stormwater runoff, septic systems, lawn fertilizers and agriculture, as well as point sources, such as wastewater treatment facilities. The SWA is being formed now to allow communities the chance to get organized in advance of stricter water quality regulations and impending new pollution load restrictions.

The Coastal Program was the catalyst for the formation of SWA with Program Manger Ted Diers helping to write the enabling legislation. Since then, Coastal Program staff have taken the lead on outreach and recruiting eligible communities, including hosting a public information meeting; developing and maintaining a blog; and designing and writing outreach materials encouraging membership. NHCP continues to provide organizational start-up support and technical assistance to SWA, including connecting members with example by-laws, setting up a google docs site, providing maps, and participating in and taking meeting minutes for both the Planning Committee and full SWA meetings.

The SWA is the first time a framework has been developed for regional intermunicipal collaboration throughout the coastal watershed. Communities now have access to a network of knowledgeable professionals in the planning and environmental community through the SWA's Advisory Committee as well as a new network of communities all facing the same issues. In addition, communities now have an opportunity to leverage funding to address water quality.

This fledgling inter-municipal organization continues to gain momentum. Since its inception in July, 30 out of an eligible 42 towns have become members with several considering membership. Communities join through a vote of the City Council or Board of Selectmen. It does not cost money to join SWA. So far the Coastal Program's contributions have all been through staff time.

Great Bay Siltation Commission

On May 14, 2007 Governor Lynch signed HB 216 (Chapter 31, Laws of 2007) establishing a commission to study the causes, effects and remediation of siltation in the Great Bay Estuary. The commission's duties include, in part, studying the historic and current sources of siltation in the estuary, studying the impacts of siltation upon the aquatic and riparian ecosystem, studying the recreational, social, and commercial uses of estuarine waters, studying methods of minimizing additional siltation, and evaluating the desirability of remediation. The commission is comprised of 21 members, including members of the New Hampshire House of Representatives and Senate, the Department of Environmental Services, the Pease Development Authority – Division of Ports and Harbors, the Fish and Game Department, the Great Bay National Estuarine Research Reserve, the New Hampshire Estuaries Project, the University of New Hampshire, the Rockingham Planning Commission, the Strafford Regional Planning Commission, The Nature Conservancy, representatives from conservation commissions from towns in the Great Bay Estuary, representatives of water-related recreational interests, and representatives from water-dependent commercial interests. The NHCP contributed to the legislation, led much of the subcommittee efforts and staffed the commission.

The Commission developed three categories of recommendations, as follows:

A. Increase research on sedimentation processes in Great Bay Estuary. A major factor that limited the Commission's analyses was the lack of information on current and long-term rates of sedimentation in all parts of the Estuary and its tributary rivers. More research is needed in order to understand sedimentation rates, sources, transport processes, and the most effective ways to reduce sediment loading to Great Bay Estuary

B. Reduce sediment loading to the Estuary. Mandate and enforce the use of BMPs for construction, agriculture and forestry; Reduce erosion by protecting buffers, limiting alteration of vegetated slopes, properly managing agricultural fields, and properly constructing and maintaining roadways and parking lots; Improve stormwater management throughout Great Bay Estuary watershed, including impacts from impervious surfaces, by enhancing stormwater infrastructure; and Maintain natural hydrology wherever possible throughout the watershed, through stream bank restoration, land use decisions, proper sizing of culverts, and re-evaluation of existing dams to identify possibilities for their removal.

C. Remediate problems resulting from excess sedimentation.

- **Sediment removal by dredging.** With consideration of rates of sedimentation and required frequency of dredging; water quality implications; environmental impacts; ecological, navigational and recreational need; cost-benefit analysis; funding alternatives; disposal alternatives, etc.;

- **Stream bank remediation.** Areas of high erosion should be mapped and targeted for restoration along with the buffer areas along rivers that help protect against erosion;

- **Habitat restoration.** Salt marshes, eelgrass beds and oyster reefs often create low energy/velocity environments where sediment and organic particles drop out of suspension. Additionally, shellfish actively filter the water column; and

- **Restoring natural hydrology.** Removal of barriers to flow can allow for natural flushing and restore native fish populations.

Energy and Government Facility Siting

Tidal energy commission

In June 2007, Governor Lynch signed HB 694 (Chapter 222, Laws of 2007), establishing a tidal energy commission to study the feasibility of tidal power generation, specifically in the Piscataqua River under the Little Bay and General Sullivan Bridges. The commission was comprised of representatives from the New Hampshire House of Representatives and Senate, state agencies, the municipalities of Dover and Newington, the University of New Hampshire, the New Hampshire Commercial Fishermen's Association, the National Marine Fisheries Service, environmental protection and advocacy organizations, and the general public.

At its inaugural meeting in August 2007 the commission elected co-chairs, former Rep. Thomas Fargo from Dover, and Kenneth Baldwin, representing the University of New Hampshire, as well as a vice chair, Ted Diers, representing the Coastal Program at DES. The commission also selected the Coastal Program to coordinate the efforts of the commission.

The commission met 11 times over the course of a year with its four subcommittees working between meetings. The subcommittees focused on the following subject areas: permitting requirements; public and business community outreach; environmental and wildlife impact analysis; and cost and benefits analysis. After a year's worth of scrutiny of the site's unique conditions and the state of the technology, the commission determined that it was premature to build a commercial tidal energy project under the Little Bay and General Sullivan Bridges. The commission found that currently available tidal energy technologies are too new at this point to warrant installation and require further research on their suitability for tidal rivers with multiple commercial and recreational uses like the Piscataqua. The commission determined that the Piscataqua River site would be an ideal place to further test these technologies, and the University of New Hampshire is taking the lead on the testing. Links to the commission's reports, text of HB 694, Chapter 222 commission members, meeting information, and other related links are listed below.

ENHANCEMENT AREA ANALYSES AND STRATEGIES

I. WETLANDS

A. Section 309 Enhancement Objective

Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands

B. 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 Data**
Tidal vegetated	8,554	9,667	+1,190	N/A	N/A	The Great Bay Habitat Restoration Compendium, 2006. Hampton-Seabrook Estuary Habitat Restoration Compendium, 2009. US Fish and Wildlife Service, National Wetlands Inventory, Summer 2005 and 2010 Revisions.
Tidal non-vegetated	N/A	8,186	-933	N/A	N/A	US Fish and Wildlife Service, National Wetlands Inventory, Summer 2005 and 2010 Revisions.
Non-tidal/ freshwater	N/A	19,758	+1,456	N/A	N/A	US Fish and Wildlife Service, National Wetlands Inventory, Summer 2005 and 2010 Revisions.
Other (please specify)	N/A	N/A	N/A	N/A	N/A	N/A

* Caution should be used when comparing wetland acreages over time. Variations in mapping techniques and map resolution can add significant margins of error to the data.

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.

The Great Bay and Hampton-Seabrook Estuary Habitat Restoration Compendiums, which were funded in part by the New Hampshire Coastal Program, were published in 2006 and 2009, respectively. These documents brought together the collective works of various scientists whom have dedicated their careers to the study of these estuaries. The development of these compendiums utilized an integrated ecosystem approach to identify multi-habitat restoration opportunities in the respective estuaries. Conceptual site selection models were created based on a comparison of historic and modern distribution and abundance data, current environmental conditions, and expert review. The resulting products from these efforts include a series of maps

detailing multi-habitat restoration opportunities. Companion guidance documents were also created to present project methods and a review of restoration methods. To conduct the salt marsh change analysis for the Hampton-Seabrook and Great Bay Estuaries, several Geographic Information System (GIS) digital maps were utilized. These included historical USGS topographical maps, 1962 salt marsh data from the Maine Geological Survey, 1991 National Wetlands Inventory, 1990 to 1992 mapped tidal wetlands produced using aerial photography by UNH, 2004 coastal wetland maps produced from aerial photography by Normandeau Associates Inc., and 2007 salt marsh data from the Massachusetts Department of Environmental Protection.

Comparison of the current and historic salt marsh inventories for the Great Bay and Hampton-Seabrook estuaries show they currently include 1,925 and 4,454 acres of salt marsh, respectively. The current extent of salt marsh has been reduced by 1561 acres (Great Bay) and 614 acres (Hampton-Seabrook) relative to the historic extent of 3,486 and 5,068 acres, respectively. These losses are the result of various habitat impacts (Odell et al, 2006; Eberhardt and Burdick, 2009). It should be noted that estimating salt marsh loss has some inherent inaccuracies because of several sources of error. Examination of the source data reveals many areas where salt marsh polygons with the same basic marsh extent and shape are offset from each other due to poor registration of the different datasets to a common shoreline. The registration error is likely the result of different base maps and projection methods used. Additionally, the different mapping projects used different survey and photo interpretation protocols. These factors led to the production of many very small polygons that likely do not represent actual loss.

The State of New Hampshire does not currently have its own digital coverages distinguishing types of wetlands. In an attempt to report on the current extent of wetlands in the coastal zone an ArcGIS model was created that utilizes the National Wetlands Inventory (NWI) coverages. The model identified all the wetlands within the coast zone, it then utilized the NWI Wetland Codes (Cowardin classes) to assign each wetland polygon one of three wetland types (tidal vegetated, tidal non-vegetated, or non-tidal/freshwater). A simple summation is then calculated to generate the acreage values presented in the above table. This methodology was utilized to facilitate repeatability when updates are made to the NWI coverages. Using this standardized methodology will also allow the Coastal Program to report on trends over time using a standard set of assumptions. The model categorizes wetlands with Cowardin classes of L, P, R2 and R3 as non-tidal/freshwater; M2 and E2 as tidal vegetated; and M1, E1 and R1 as tidal non-vegetated. This model was run on both the 2005 and 2010 revisions of the NWIs. The results were then compared to generate the trends in acres lost since 2006.

Historic estimates of wetland acreages can very greatly depending on how the estimates were made. A 1954 survey conducted by the US Fish and Wildlife Service and the NH Department of Fish and Game identified 5,660 acres of saltmarsh in New Hampshire. That inventory, however, measured only wetlands larger than 40 acres in size. A more recent estimate by the Soil Conservation Service shows approximately 6,200 acres of salt marsh (USDA, 1994). Similarly, a 1974 soil survey of New Hampshire tidal marshes estimated 7,500 acres (Breeding et al, 1974). The most recent inventory of the historic extent of tidal marshes presented in the Great Bay and Hampton-Seabrook Estuary Habitat Restoration Compendiums estimate a total of 8,554 acres, although that estimate is not inclusive of the entire coastal zone (Odell et al, 2006; Eberhardt and Burdick, 2009).

3. Provide a brief explanation for trends.

Although the DES Wetlands Bureau tracks the acres of permitted wetland impacts over time, this information is not readily available by type of wetland or by geographic area. The Wetlands Bureau estimates that an average of 137 acres of wetlands were impacted each year statewide during 2005-2009. Also during this time, an average of 1608 acres of wetland and upland buffer were protected each year through compensatory mitigation. An average of 57 acres of wetland were created or restored each year through mitigation during 2005-2009. The information above includes tidal wetlands restored in the Coastal Zone.

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

There are currently no planned efforts to develop additional monitoring programs or quantitative measures for tracking wetlands in the coastal zone. The ArcGIS model created as part of this assessment will help with future trend analyses of wetlands in the coastal zone. The model is designed to automatically run through the process of determining what wetlands are within the coastal zone and assigning them a wetland type. The only variable is the NWI coverage. As revisions to the NWI are produced the model can be run and trends identified.

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	High	Extensive	High
Alteration of hydrology	Moderate	Extensive	High
Erosion	Moderate	Limited	Low
Pollution	N/A	N/A	N/A
Channelization	High	Limited	High
Nuisance or exotic species	High	Extensive	High
Freshwater input	Moderate	Extensive	Moderate
Sea level rise	Low	Limited	High
Other (please specify)	N/A	N/A	N/A

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 Completed or Substantially Updated**
Tidal Wetlands	Yes	January, 2010
Beach and Dune	Yes	November, 2008
Nearshore	No	N/A

Habitat Type	CMP has Mapped Inventory (Y or N)	Date Completed or Substantially Updated
Other (Eel Grass)	Yes	2008

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	68 acres (Information is not available to differentiate funding sources, a portion of funding for many of the restoration projects came from CZM or CELCP.) Data obtained from the NH Coastal Program and the Piscataqua Region Estuaries Partnership.
Number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds	4,024 acres (Information is not available to differentiate funding sources, a portion funding for many of the habitat protection projects came from CZM or CELCP.) Data obtained from the NH Coastal Program and the Piscataqua Region Estuaries Partnership.

C. 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 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 implementation, policies, and standards	Yes	No
Wetland protection policies and standards	Yes	Yes
Wetland assessment methodologies (health, function, extent)	Yes	No
Wetland restoration or enhancement programs	Yes	No
Wetland policies related public infrastructure funding	No	No
Wetland mitigation programs and policies	Yes	Yes
Wetland creation programs and policies	Yes	Yes
Wetland acquisition programs	Yes	Yes
Wetland mapping, GIS, and tracking systems	No	No
Special Area Management Plans	No	No
Wetland research and monitoring	Yes	No
Wetland education and outreach	Yes	No
Other (please specify)	N/A	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.

New Hampshire has had a significant change since the last assessment in the management categories of wetland protection policies and standards, and wetland mitigation, creation and acquisition programs and policies. The Comprehensive Shoreland Protection Act (CSPA; RSA 483-B) was originally enacted into law in the 1991 session of the New Hampshire Legislature. The act established minimum standards for the subdivision, use and development of the shorelands along the state's larger waterbodies. In April and July of 2008, the act was amended and several changes took effect including limitations on impervious surfaces, new vegetation maintenance requirements and the establishment of a permit requirement for many, but not all, construction, excavation and filling activities within the protected shoreland (within 250 feet of the high water mark). This initiative was driven by non-CZM efforts.

In March, 2004, the DES Wetlands Program adopted a set of mitigation rules that establish what is necessary for an applicant to provide for wetland compensation. The rules spell out ratios for wetland creation, restoration and upland preservation relative to the type of wetland lost through the proposed development. During the 2006 legislative session, the General Court enacted Senate Bill 140, known as Aquatic Resource Compensatory Mitigation. Chapter 313, Laws of 2006 has now been codified at RSA 482-A:28 through RSA 482-A:33. The law became effective on August 18, 2006 and DES adopted the rules for its operation on June 20, 2007 (Env-Wt 100-800).

The Aquatic Resource Mitigation (ARM) Fund has been created as one of several compensatory mitigation options available to permittees for impacts to wetlands and other aquatic resources. This mitigation option is available for use after avoidance and minimization of impacts to these aquatic resources has been achieved. Although compensatory mitigation is often a requirement in permits, use of the ARM Fund can only occur after the applicant has reviewed other meaningful forms of mitigation in the vicinity and local community. The ARM Fund seeks "no net loss" of aquatic resource acreage and functions using a watershed approach. DES has the authority to collect the funds and they are pooled together according to the Hydrologic Unit Code 8 (HUC 8) watershed level.

Since the ARM Fund's inception in 2007, 32 projects have used the payment option as mitigation for permitted wetland impacts. The 32 permitted projects resulted in 15.2 acres of wetland impacts over the three years of operation. For these wetland impacts, the Fund accrued contributions totaling $1,907,000.00. The ARM Fund has made significant progress toward accomplishing its goal of providing watershed-based mitigation for permitted impacts. The Department recognizes the Fund is in an advantageous position to bring significant mitigation projects to completion. The new Aquatic Resource Mitigation program offers a chance for municipalities to accomplish high priority local conservation goals; a mechanism for developers to

proceed with projects once not viable because no compensatory wetland mitigation was practicable; and an opportunity for the State to accomplish projects with greater conservation value than can be achieved through conventional compensatory wetland mitigation. Beginning in 2010 ARM funds will be available to projects with the coastal zone. These initiatives were driven by non-CZM efforts, however, 309 staff participated to a great extent especially in creating the mitigation rate structure.

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 Wetlands	Yes	Hampton-Seabrook Estuary, 2009 Great Bay Estuary, 2006
Beach and Dune	No	N/A
Nearshore	No	N/A
Other (please specify)	N/A	N/A

D. 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)**
An active ArcGIS coverage is not currently being kept or generated by the Wetlands Department estimating the wetlands that are being impacted, removed, or created when permits are issued. This type of coverage would help determine acreage changes over time in the coastal zone.	Data	Medium
Improvements to performance measure systems relative to the development of databases and tracking procedures for the Wetlands Department.	Data, policy and capacity	High

E. 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.

Wetlands help to mitigate flooding and erosion risks and are often impacted by development. The Coastal Program has a long history of wetland restoration activities and policy development. Further improvements to policies and programs related to wetlands can be made with 309 involvement. The NH Coastal Program has chosen a priority level of high for this enhancement area to foster future improvements.

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.

Because the Coastal Program has determined that wetlands are a high priority area for the coastal zone, one or more strategies will be developed to foster further improvements to policies and programs related to wetlands. The development of performance measure systems and spatial databases for the tracking of wetland related data (i.e. applications, mitigation, etc.) would be strengthened with 309 involvement.

II. COASTAL HAZARDS

A. Section 309 Enhancement Objective

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

B. 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 Risks: 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	High	Coast-wide
Coastal storms, including associated storm surge	Moderate	Sub-region
Geological hazards (e.g., tsunamis, earthquakes)	Moderate	Coast-wide
Shoreline erosion (including bluff and dune erosion)	Moderate	Sub-region

Type of Hazard	General Level of Risk (H,M,L)	Geographic Scope of Risk (Coast-wide, Sub-region)
Sea level rise and other climate change impacts	Moderate	Sub-region
Land subsidence	Low	Coast-wide
Other (Dam Failure)	Moderate	Coast-wide
Other (Severe Winter Weather)	High	Coast-wide
Other (Drought)	Moderate	Coast-wide
Other (Wildfire)	High	Coast-wide
Other (Radon)	Moderate	Coast-wide
Other (Tornado/Downburst)	Moderate	Coast-wide
Other (Hurricane)	High	Coast-wide
Other (Lightning)	Moderate	Coast-wide

2. For hazards identified as a 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?

In accordance with the Disaster Mitigation Act 2000 the state of New Hampshire Department of Safety, Division of Homeland Security and Emergency Management developed a state wide Hazard Mitigation Plan. The most recent revision to this plan was adopted by the state of New Hampshire and submitted to Federal Emergency Management Agency (FEMA) in October 2007. The 2007 revision identified flooding, severe winter weather and wildfire as high risk hazards for the entire state. The plan identified flooding, severe winter weather, wildfire and hurricane as high risk hazards for the Coastal Zone (Rockingham and Strafford County; NHDOS, 2007). Between 2006 and 2009, there were five FEMA declared disasters in the Coastal Zone. Two for severe winter weather emergencies and three for severe storm, tornado and flooding emergencies (FEMA).

Sea level rise has been identified to pose a moderate level of risk to the coastal zone despite Coastal Hazards being identified as a high priority area. This is due in part to the timeframe in which the effects will be encountered. In the short term the effects of sea level rise pose little risk to the coastal zone, however in the long term the risk is much greater. It is the Coastal Program's opinion that if appropriate actions are taken now to plan for sea level rise, much of the risk associated with the long term can be reduced. For this reason sea level rise has been categorized as a moderate risk.

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.

The level of risk or state of knowledge of risk for the hazards presented in the table above has not changed since the last assessment.

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

The planning effort of the State of New Hampshire is an ongoing process and the Natural Hazard Mitigation Plan is considered to be a "living document." The State of New Hampshire and the Department of Safety – Division of Homeland Security & Emergency Management assures that the State will comply with all applicable federal statues and regulations, at all times during which it receives grant funding. In compliance with 44 CFR 13.11 (c), the Division of Homeland Security & Emergency Management will amend this plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11 (d) (NHDOS, 2007).

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 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.

Type of Hazard	Number of Communities That Have a Mapped Inventory	Date Completed or Substantially Updated
Flooding	All 17 coastal communities have some form of flood mapping in their hazard mitigation plans	2004-2006
Storm surge	None	N/A
Geological hazards (including Earthquakes, tsunamis)	None	N/A
Shoreline erosion (including bluff and dune erosion)	None	N/A
Sea level rise	3 (Seabrook, Hampton and Portsmouth	2001/2009
Great lake level fluctuation	N/A	N/A
Land subsidence	None	N/A
Other (please specify)	N/A	N/A

C. 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	Yes	Yes
Methodologies for determining setbacks	Yes	No
Repair/rebuilding restrictions	Yes	Yes
Restriction of hard shoreline protection structures	Yes	No
Promotion of alternative shoreline stabilization methodologies	Yes	No
Renovation of shoreline protection structures	Yes	No
Beach/dune protection (other than setbacks)	Yes	No
Permit compliance	Yes	Yes

Management Categories	Employed by State/Territory (Y or N)	Significant Changes Since Last Assessment (Y or N)
Sediment management plans	Yes	Yes
Repetitive flood loss policies, (e.g., relocation, buyouts)	No	No
Local hazards mitigation planning	Yes	No
Local post-disaster redevelopment plans	Yes	No
Real estate sales disclosure requirements	No	No
Restrictions on publicly funded infrastructure	No	No
Climate change planning and adaptation strategies	No	Yes
Special Area Management Plans	No	No
Hazards research and monitoring	Yes	No
Hazards education and outreach	Yes	No
Other (please specify)	N/A	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.

The greenhouse gas emissions that result from the generation of energy are contributing to New England's changing climate. These changes include: warmer winters, reduced snowfall and snow-on-ground days, earlier spring runoff, sea-level rise, increased total rainfall, and more severe weather events that result in increased risk of flooding. These changes in New England's climate are projected to increase in severity in the future if left unchecked. To help combat these changes Governor Lynch issued Executive Order Number 2007-3, in December 2007, which established a Climate Change Policy Task Force and charged the Task Force with developing a Climate Action Plan for the State of New Hampshire. The Task Force is chaired by the Commissioner of the DES and is composed of 29 members representing a broad range of interests. The task force released the final plan on March 25, 2009, which identified ten overarching strategies necessary to reduce New Hampshire's annual greenhouse gas emissions and position the state to achieve long-term emissions reductions of 80 percent below 1990 levels by 2050. These strategies are necessary to comprehensively address the causes and the impacts of climate change and include:

1. Maximize energy efficiency in buildings.
2. Increase renewable and low-CO_2-emitting sources of energy in a long-term sustainable manner.
3. Support regional and national actions to reduce greenhouse gas emissions.
4. Reduce vehicle emissions through state actions.
5. Encourage appropriate land use patterns that enable fewer vehicle-miles traveled.
6. Reduce vehicle-miles traveled through an integrated multimodal transportation system.

7. Protect natural resources (land, water, wildlife) to maintain the amount of carbon fixed or sequestered.
8. Lead by example in government operations.
9. Plan for how to address existing and potential climate change impacts.
10. Develop an integrated education, outreach and workforce training program.

The Task Force recommended 67 actions that support the ten overarching strategies and will enable New Hampshire to continue to do its part to address climate change immediately as well as position the state and its citizens to implement even greater reductions in the future. These actions will benefit the economy, increase state and regional energy security, and improve environmental quality (NHCCPTF, 2009). The Section 309 staff participated in the development of recommendations related to climate change adaptation.

The Comprehensive Shoreland Protection Act (CSPA) was originally enacted into law in the 1991 session of the New Hampshire Legislature. The Act establishes minimum standards for the subdivision, use, and development of the shorelands of the state's larger water bodies. On July 1, 2005, Senate Bill 83 established a commission to study the effectiveness of the comprehensive shoreland protection act. The commission was charged with assessing land-use impacts around the state's public waters; assessing size, type, and location standards pertaining to structures as outlined in the CSPA; assessing shoreland buffer and setback standards; and assessing nonconforming use, lot, and structure standards. The Commission was comprised of 24 members representing a variety of stakeholders including the General Court, the conservation community, the regulatory community, natural resource scientists, agricultural interests, business and economic interests, and members of the general public. The final report of the Commission contained 17 recommendations for changes to the CSPA. Sixteen of those recommendations for change were enacted into law and became effective April 1, 2008. The changes are broad in scope and include impervious surface allowances, a provision for a waterfront buffer in which vegetation removal is restricted, shoreland protection along rivers designated under RSA 483 (Designated Rivers), and the establishment of a permit requirement for many construction, excavation or filling activities within the Protected Shoreland (DES, 2008). These initiatives were driven by non-CZM efforts.

In 2007, the NH Office of Emergency Management published a new State Hazard Mitigation Plan. The previous plan in 2004 had a very short coastal hazard section that had not been updated in at least a decade. At the request of OEM, the NHCP rewrote the section with new data in a robust analysis of coastal risks. The new chapter was published as written by the NHCP along with the recommendations for the overall state plan.

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 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.

   For CMPs that use numerically 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 setbacks, buffers, or other land use policies to direct develop away from hazardous areas.	17 (Thirteen of the communities are located within Rockingham County and the remaining four are located within Strafford County.)
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.	13 of 17 (Ten of the communities are located within Rockingham County and the remaining three are located within Strafford County.)

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.	N/A
Number of communities that have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas.	N/A

D. 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)
Mapped inventory depicting past and projected sea level rise, erosion and past hurricane paths would be useful to Regional Planning Commissions.	Data	Low
Development of a Coastal Adaptation Plan/Toolbox for use by coastal communities and regional planning agencies.	Regulatory, policy and training	High
Develop a policy or legislation so that towns are required to use the Coastal Adaptation Plan in their planning process.	Policy	Moderate
Add language to the State Climate Action Plan for implementation of a Coastal Adaptation Plan.	Regulatory and policy	High
Post processing of Light Detection and Ranging (LIDAR) imagery for the coastal watershed.	Data	Low

E. 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.

New England's climate is undergoing changes that include warmer winters, reduced snowfall and snow-on-ground days, earlier spring runoff, sea-level rise, increased total rainfall, and more severe weather events that result in increased risk of flooding. These climate changes are projected to increase in severity in the future if left unchecked. The Coastal Program feels that improvements to policies and programs related to coastal hazards can be made with 309 involvement. The NH Coastal Program has chosen a priority level of high for this enhancement area to foster future improvements.

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.

In recent years coastal communities have been forced to deal with a variety of challenges resulting from climate change. To combat the increasing severity these hazards will pose in the near future communities need to implement appropriate measures now. New Hampshire has made some progress in this preparedness through the development of the New Hampshire Climate Action Plan, and through participation in organizations like the New Hampshire Coastal Adaptation Workgroup (NHCAW). The Coastal Program feels these efforts can be strengthened with 309 involvement and the development of a strategy directed at supporting the efforts by NHCAW in the development of a Coastal Adaptation Plan.

III. PUBLIC ACCESS

A. 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

B. 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 Impact on Access	Type(s) of Access Affected
Private residential development (including conversion of public facilities to private)	Low	No data available	N/A
Non-water dependent commercial/industrial uses of the waterfront (existing or conversion)	Low	No data available	N/A
Erosion	Low	No data available	N/A
Sea level rise/ Great Lake level change	Moderate	Increasing	Access to salt marsh habitat
Natural disasters	Low	No data available	N/A
National security	Low	No data available	N/A
Encroachment on public land	Low	No data available	N/A
Other	N/A	N/A	N/A

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?

There are no emerging issues in New Hampshire that are starting to affect public access or have the potential to do so in the future.

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 that responded to a survey on recreational access	198
Number of people surveyed that responded that public access to the coast for recreation is adequate or better.	59
What type of survey was conducted (i.e. phone, mail, personal interview, etc.)?	Electronic survey
What was the geographic coverage of the survey?	Coastal Watershed, which encompasses the 17 coastal communities.
In what year was the survey conducted?	August – September 2009

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

Nearly 78% of New Hampshire's beaches along the coast are publicly owned either by the State or local communities. The public have access to these beaches through numerous State Parks, which include parking, restrooms and in some instances RV accommodations. Additionally, the Great Bay Estuary has numerous public access points although a greater proportion of the shoreline is privately owned. Public access points within Great Bay include

motorized and non-motorized boat launches as well as trails and wildlife viewing areas. The only type of access lacking within the Great Bay Estuary (based on stakeholder discussions) is a year-round all-tide small craft boat launch.

Annual visitation surveys completed by the New Hampshire Division of Parks and Recreation show that more than 3 million people access New Hampshire's public beaches every summer. Demand for coastal access is also assessed by the New Hampshire Office of Energy and Planning (OEP) periodically through the use of outdoor recreation surveys and community needs assessments. The most recent of these was completed in 2007. These do not poll stakeholders on coastal access specifically; however they do poll New Hampshire residents on their outdoor recreation priorities and interests. For example, the most recent survey revealed that the most popular forms or outdoor recreation are casual activities such as walking, sightseeing and visiting beaches. Demand for most activities is increasing because of the growth in population, increases in popularity, desire for better health, or all three. More people are participating in a wider variety of activities today than was the case 10 or 20 years ago (NHOEP, 2007). The OEP compiles their surveys as well as other stakeholder input in its Statewide Comprehensive Outdoor Recreation Plan (SCORP). The most recent plan was developed for 2008-2013.

On May 14, 2007 Governor Lynch signed HB 216 (Chapter 31, Laws of 2007) establishing a commission to study the causes, effects and remediation of siltation in the Great Bay Estuary. The Great Bay Siltation Commission's duties include, in part, studying the historic and current sources of siltation in the estuary, studying the impacts of siltation upon the aquatic and riparian ecosystem, studying the recreational, social, and commercial uses of estuarine waters, studying methods of minimizing additional siltation, and evaluating the desirability of remediation.

To help fulfill the obligation to "Study the recreational, social, and commercial uses of estuarine waters," the Commission developed a Recreational Use Survey to ascertain how and where users recreate in the Great Bay Estuary, the quality of their recreational experience, and their level of concern with various recreational and navigational issues. The survey was developed using a web-based survey tool. Participants in the survey were not randomly selected rather the general composition of the audience was determined by the Commission. For example, participants included those individuals and groups identified as stakeholders and interested parties in the organizations represented by the members comprising the Commission. Additionally, links to the survey were posted on the Commission's web site (hosted by the DES Coastal Program), and on the web sites and in the newsletters of Commission members, including the Piscataqua Region Estuaries Partnership and the Strafford Regional Planning Commission.

The survey ran for 36 days from late August to late September 2009. During that time period 198 people responded to the survey, approximately 70% of whom live in municipalities bordering the Great Bay Estuary. Question 11 of the survey asked "What other issues relative to the recreational experience in the Great Bay Estuary are of concern to you?" Of the few responses to the question, the most common responses was limited public access. Similarly, question 14 asked the survey takers if there was anything they would like to share with the

Commission. Three of the most common responses were to increase all-tide access to the bay, increase public access sites, and conduct more surveys like the one they were taking.

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 Number(s)	Changes Since Last Assessment (+/-)	Cite Data Source
(CM) Number of acres in the coastal zone that are available for public (report both the total number of acres in the coastal zone and acres available for public access)	152,719 Acres in the CZ. 11,734 acres available for public access	+ 1,801 acres[(a)]	Us Geological Survey. "Political Boundaries" GIS coverage. 2009 Revision; Society for the Protection of NH Forests. "Conservation/Public Lands" GIS coverage. 2009 Revision.
(CM) Miles of shoreline available for public access (report both the total miles of shoreline and miles available for public access)	18 mile of Coastline. 18 mile available for public access, no other info available.	No Change	Brian Warburton, Regional Park Supervisor, Dept of Resources & Economic Development, Personal Communication
Number of State/County/Local parks and number of acres	21 (1,990 acres)	+8	NH Office of Energy and Planning. "OEP Recreation Inventory" GIS coverage. 2007 Revision.
Number of public beach/shoreline access sites	15	+1	NH Office of Energy and Planning. "Access Sites to Public Waters" GIS coverage. 2008 Revision.
Number of recreational boat (power or non-power) access sites	30	+5	NH Office of Energy and Planning. "Access Sites to Public Waters" GIS coverage. 2008 Revision.
Number of designated scenic vistas or overlook points	31	N/A	NH Coastal Program Section 309 Enhancement Grants Program Assessment and Strategy. 2001 and 2006
Number of State or locally designated perpendicular rights-of-way (i.e. street ends, easements)	54	N/A	NH Coastal Program Section 309 Enhancement Grants Program Assessment and Strategy. 2001 and 2006
Number of fishing access points (i.e. piers, jetties)	11	+4	NH Office of Energy and Planning. "Access Sites to Public Waters" GIS coverage. 2008 Revision.
Number and miles of coastal trails/boardwalks	91.25	N/A	www.trails.com
Number of dune walkovers	N/A	N/A	N/A
Percent of access sites that are ADA compliant access	24% have some level of ADA compliance	N/A	NH Office of Energy and Planning. "Access Sites to Public Waters" GIS coverage. 2008 Revision.
Percent and total miles of public beaches with water quality monitoring and public closure notice programs	100% (8.3 miles)	+1 Beach	Sonya Carlson, DES Public Beach Program Coordinator, Personal Communication; DES Environmental Monitoring Database
Average number of beach mile days closed due to water quality concerns	0[(b)]	0[(b)]	Sonya Carlson, DES Public Beach Program Coordinator, Personal Communication

(a) Change indicates when the property was added to the GIS coverage not when the transaction occurred.

(b) DES received grant funding in 2002 to develop and implement a beach monitoring and notification program consistent with EPA's performance criteria requirements published in the *National Beach Guidance and Required Performance Criteria for Grants* document. DES has successfully met all requirements and continues to expand the monitoring and notification program. At the end of the last assessment period (2006) 16 coastal beaches were monitored on a routine basis. During this assessment period 17 coastal beaches were monitored on a routine basis. DES does not have the authority to close beaches; only local communities have that authority. Communities will post advisories when DES lists them, but so far have not chosen to close beaches. Between 2003 and 2006 there were 11 advisories posted. From 2007 to the present there were 14 advisories posted.

All 18 miles of shoreline in New Hampshire are assessable at low tide. The shoreline consists of sandy beaches and rocky outcrops. These areas are accessible through numerous State Parks and from direct access through parking areas along Route 1A, which parallels the shoreline. Although the exact extent is unknown, some areas of the shoreline are only assessable by way of public trust (RSA 483-C:1, II). The vast majority of these areas are comprised of rocky outcrops; all of the sandy beaches within the state have direct public access at all tide stages.

C. 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)
Statutory, regulatory, or legal system changes that affect public access	Yes	No
Acquisition programs or policies	Yes	No
Comprehensive access management planning (including GIS data or database)	Yes	No
Operation and maintenance programs	Yes	No
Alternative funding sources or techniques	No	No
Beach water quality monitoring and pollution source identification and remediation	Yes	No
Public access within waterfront redevelopment programs	No	No

Management Categories	Employed by State/Territory (Y or N)	Significant Changes Since Last Assessment (Y or N)
Public access education and outreach	Yes	No
Other (please specify)	N/A	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.

There have been no significant changes in the public access management categories since the last assessment.

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.

The New Hampshire Coastal Program has a printed public access guide specific to coastal New Hampshire. The "New Hampshire Coastal Access Map" provides coastal boat and land access locations in addition to specific site information. The map was produced through the compilation of information from several organizations including the Office of Energy and Planning and the Department of Fish and Game. The Coastal Access Map was first produced in 1999 and updated in 2007. The map is available in printed form and as a printable document on the Coast Program's website: http://des.nh.gov/organization/divisions/water/wmb/coastal/documents/coastal_access_map.pdf.

In addition to the Coastal Program's access map there are several other state agencies that have websites dedicated to public access. The New Hampshire Division of Parks and Recreation has a comprehensive website (http://www.nhparks.state.nh.us/) that includes maps, news and information on all state owned parks. The New Hampshire Department of Fish and Game's website (http://www.wildlife.state.nh.us/pubaccess_maps/pubaccess_map.htm) provides a map of public boat launches and fishing access locations. There are several other state-run and private websites that provide information on public access locations throughout New Hampshire. These include but are not limited to www.trails.com and http://www.visitnh.gov/.

D. 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)
There is a need for an all-tide and all-season access boat launch for small craft in Great Bay.	Facility	Low
There is no one single source of coastal access information. There are several state agencies that maintain information. A repository for all of this information would assist regional planners and the states ability for reporting.	Data	Low

E. 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.

There is no lack of direct public access to coastal resources in the New Hampshire coastal zone; therefore the Coastal Program has determined that public access should be categorized as 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.

As stated above, there is no lack of access to coastal resources in the New Hampshire coastal zone; therefore a strategy will not be developed at this time. Coastal Program 309 staff will continue to work in this enhancement area and will collect information to identify whether future program changes are needed.

IV. MARINE DEBRIS

A. Section 309 Enhancement Objective

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

B. 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 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 Changes Since Last Assessment** (Y or N)
Land Based – Beach/Shore Litter	High	Aesthetic and resource damage	No
Land Based – Dumping	Moderate	Aesthetic and resource damage	No
Land Based – Storm Drains and Runoff	Moderate	Aesthetic and resource damage	No
Land Based – Fishing Related (e.g. fishing line, gear)	Low	Aesthetic, resource damage and user conflicts	No
Ocean Based – Fishing (Derelict Fishing Gear)	High	Aesthetic, resource damage and user conflicts	No
Ocean Based – Derelict Vessels	Low	Aesthetic and resource damage	No
Ocean Based – Vessel Based (cruise ship, cargo ship, general vessel)	Low	Aesthetic and resource damage	No
Hurricane/Storm	Moderate	Aesthetic and resource damage	No
Other (please specify)	N/A	N/A	N/A

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.

   Not Applicable

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

Although there have been no significant changes in the amount of marine debris collected/present since the last assessment, the Blue Ocean Society for the Marine Environment (BOS) has noticed a decreasing trend in the volume of trash removed from local beaches since the inception of the program. It is likely that increased cleanups over the years has made an impact on the cleanliness of the beaches and decreasing the amount of debris washing out to the ocean, which poses less potential risk to local wildlife and beach visitors (Kennedy, 2009).

In an effort to better characterize the sources and distribution patterns of ocean-based debris, especially derelict fishing gear, the BOS conducted a side-scan sonar survey in 2008. Derelict fishing gear is an extremely dangerous form of marine debris. To help identify underwater "ghost gear" so that areas could be targeted for future removal projects the BOS conducted an initial side-scan sonar survey aboard the University of New Hampshire research vessel Cocheco on September 16, 2008. The survey focused on the Portsmouth Harbor area due to its popularity for fishing and its use by commercial and recreational vessels (which have the potential to cut lobster buoy lines in transit). Approximately three nautical miles of sonar tracks were made from Portsmouth, NH to Kittery, ME. Approximately 300+ derelict lobster pots were identified. Pots were generally observed in piles of three or more and in the vicinity of active fishing gear ($UNH_{(a)}$).

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

The N.H. Coastal Program uses beach clean-up data in a variety of mechanisms, including outreach material and media exposure. Beach clean-up data is particularly useful in reporting aspects as it offers tangible results of Coastal Program efforts (i.e. the number of ponds of debris cleaned up in a given year). The data is also used by local communities and state agencies for planning efforts (e.g. requesting funds to install additional garbage or cigarette receptacles at state run beaches). Beach clean-up data is provided by the Blue Ocean Society for Marine Conservation, located in Portsmouth, New Hampshire.

C. 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)	**Employed by Local Governments** (Y, N, Uncertain)	**Significant Changes Since Last Assessment** (Y or N)
Recycling requirements	No	Yes	No
Littering reduction programs	Yes	Uncertain	No
Wasteful packaging reduction programs	No	No	No
Fishing gear management programs	Yes	No	Yes
Marine debris concerns in harbor, port, marine, & waste management plans	No	No	No
Post-storm related debris programs or policies	No	No	No
Derelict vessel removal programs or policies	Yes	No	No
Research and monitoring	Yes	No	No
Marine debris education & outreach	Yes	No	No
Other (please specify)	N/A	N/A	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.

There have been significant changes since the last assessment in the management category of Fishing Gear Management Programs. In 2007 the Blue Ocean Society partnered with the Yankee Fishermen's Cooperative and Waste Management to develop the NH Marine Debris to

Energy Project. This project was funded by the New Hampshire Sea Grant and a grant from the NOAA Marine Debris Program. The project takes a holistic approach to marine debris by tracking and cleaning up marine debris on the shore, underwater, and on the ocean. A large component of this project involves collecting derelict fishing gear in a dumpster at the Yankee Fisherman's Cooperative in Seabrook, New Hampshire. The debris in the dumpster is taken to a facility where it is combusted and the energy recovered to make electricity. The project also provides a collection point for data, via the web, from beach cleanup volunteers, commercial and recreational fishermen, and others to report marine debris. Users of the website are able to generate reports and maps to learn more about marine debris along the New Hampshire coast and in the Gulf of Maine ($UNH_{(b)}$).

D. 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)
The NH Fish and Game Department currently has regulation concerning the molestation of lobster traps. RSA 211:31states that "lobster pots, traps, warps (ropes), cars or buoys are private property, regardless of the location. This includes on the beach and in the rocks. No person except the owner or a conservation officer can possess, lift, molest or disturb them. To do so can result in a fine of $2,000 and up to one year in jail." These regulations impede coastal clean-up efforts and a revision should be sought to allow for clean-up efforts without penalty.	Regulatory and policy	Moderate
The BOS has observed the need for inclusion and/or more trash receptacles at state parks and beaches. It is the opinion of BOS that the current carry-in carry-out program is not an efficient means of managing waste.	Funding, capacity and outreach	Low
Wasteful packaging reduction programs	Funding, capacity and outreach	Low
Initiation and management of pet waste outreach campaigns.	Funding, capacity and training	Low

E. 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 analysis of this Enhancement Area does not identify any high priority gaps or needs in the issue of marine debris. Although not identified as a gap or need, derelict fishing gear removal is of great importance in New Hampshire. Derelict fishing gear can continue to catch marine life even though it is not actively being used. The gear can continue to function for months or even years, catching marine mammals, seabirds, fish and invertebrates. Certain types of fishing gear (e.g. nets) can even smother habitat. Comprehensive marine debris monitoring and education programs are being carried out by the Blue Ocean Society and the National Marine Debris Monitoring Program. Funding from the NHCP enables these programs to happen. The Division of Parks and Recreation also works to abate marine debris through their "carry-in, carry-out" policy and signage on public beaches. In addition the majority of the seventeen Coastal Zone communities have recycling programs.

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.

Although marine debris has not been determined to be a high priority area within the coastal zone, there are hindrances in efforts to remove marine debris that could greatly benefit from 309 involvement. Of particular concern is the regulation preventing individuals from removing/cleaning-up derelict lobster traps. A strategy will be developed to examine this issue and look at ways to remediate the problems it causes.

V. CUMULATIVE AND SECONDARY IMPACTS

A. Section 309 Enhancement Objective

Development 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.

B. 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)	Types of CSI
Portsmouth, Greenland, North Hampton, Hampton, Hampton Fall and Seabrook along Interstate 95	Residential and commercial	Moderate	Habitat destruction and stormwater runoff to wetlands.
Dover, Madburry, Durham, Newmarket, Newfields, Stratham and Exeter along Route 108	Residential and commercial	Moderate	Habitat destruction and stormwater runoff to the Great Bay estuary.
Portsmouth, Greenland and Stratham along Route 33	Residential and commercial	Moderate	Habitat destruction and stormwater runoff to the Great Bay estuary.
Exeter, Stratham and Hampton along Route101	Residential and commercial	Moderate	Habitat destruction and stormwater runoff to the Exeter River and Hampton/Seabrook Harbor.
Durham, Newington and Portsmouth along Route 4	Residential and commercial	Moderate	Habitat destruction and stormwater runoff to the Great Bay estuary.
Pease International Tradeport	Commercial and Industrial	Moderate	Habitat destruction and stormwater runoff to the Great Bay estuary.

According to the U.S. Census Bureau the population of New Hampshire is projected to increase by 33.2 percent between 2000 and 2030. Approximately 31.5 percent of this increase is projected to occur within Rockingham and Strafford County, which encompass the coastal communities. Rockingham County, which contains most of the communities in the Coastal Zone, is predicted to grow by 75,720 people during this 30 year period. Strafford County, which also contains Coastal Zone communities, is expected to grow by 31,071 people (NHOEP, 2008).

Population growth drives residential and commercial development and subsequently cumulative and secondary impacts within the coastal communities. The greatest numbers of people are expected to move to larger communities such as Durham, Dover, Portsmouth, Hampton and Exeter. The impacts from this growth and development include habitat fragmentation, water quality degradation, and increased stormwater runoff.

Indicators of this growth include increases in impervious surfaces. Conversion of forest and farmland to residential and commercial uses is high along transportation corridors such as Interstate 95, Route 101, Route 4, Route 33 and Route 16. Communities along these transportation corridors will be particularly vulnerable to the negative environmental effects of this development.

Towns where impervious surfaces are still less than ten percent of total land cover warrant particular attention. Studies have demonstrated water quality degradation occurs where impervious surfaces cover greater than ten percent of the watershed (CWP, 2003). According to

a Piscataqua Region Estuaries Partnership study these towns include Durham, Hampton Falls, Madbury, Newfields, and Rollinsford (PREP, 2009).

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)
Great Bay Estuary	Stormwater runoff, faulty septic systems, nonpoint source pollution, wetland filling nutrients, sedimentation and mooring field expansion.	High
Hampton/Seabrook Harbor	Stormwater runoff, faulty septic systems, tidal restrictions, nonpoint source pollution and wetland filling.	High
Freshwater tributaries	Increased runoff/flow during storm events, lower base flow in summer (leading to habitat degradation), erosion, faulty septic systems, nonpoint source pollution, and high chloride levels due to road salt runoff	Moderate
Vegetated buffers around wetlands and streams	Habitat fragmentation and loss, invasive species and erosion.	Moderate
Seabrook and Hampton sand dunes	Human disturbance, vandalism, erosion and habitat loss.	Low
Benthic and pelagic habitats (estuarine)	Sedimentation, nutrient loading, alteration of salinity and disease.	Low
Upland forests	Habitat fragmentation and loss, invasive species and erosion.	Moderate
Salt marshes and wetland	Invasive plants, increased runoff, change in hydrology, nonpoint source pollution and reduction in area from incremental filling.	High

C. 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	Yes	Yes
Policies	No	No
Guidance	Yes	Yes

Management Categories	Employed by State/Territory (Y or N)	Significant Changes Since Last Assessment (Y or N)
Management Plans	Yes	No
Research, assessment, monitoring	Yes	Yes
Mapping	No	No
Education and Outreach	Yes	Yes
Other (please specify)	N/A	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.

There have been significant changes since the last assessment in the regulations and guidance management category. In December 2008 DES published the *New Hampshire Stormwater Manual*, a three volume planning and design tool for the communities, developers, designers and members of regulatory boards, commissions, and agencies involved in stormwater programs. Volume 1: *Stormwater and Antidegradation* presents an overview of New Hampshire's stormwater program together with related federal program requirements, describes New Hampshire's antidegradation provision (Env-Wq 1708) with respect to controlling water quality impacts due to stormwater discharges, and provides an introduction to the non-structural and structural measures for managing stormwater. Volume 2: *Post-Construction Best Management Practices Selection and Design* presents a detailed description of the structural BMPs applicable for use in New Hampshire for the prevention, control, and treatment of stormwater. Volume 3: *Erosion and Sediment Controls During Construction* presents a selection of practices applicable during the construction of projects to prevent adverse impacts to water resources as a result of land-disturbance activities.

New Hampshire Surface Water Quality Regulations (Env-Wq 1700) implement RSA 485-A and federal Clean Water Act (CWA) requirements and are intended to protect the state's surface waters. The New Hampshire Surface Water Quality Regulations are implemented through various state permitting and certification programs, including the 401 Water Quality Certificate and the Alteration of Terrain Permit. The Water Quality Regulations establish designated uses, specify appropriate water quality criteria to protect those designated uses, and establish an antidegradation policy to protect surface water from pollutants. The Alteration of Terrain permit protects New Hampshire surface waters, drinking water supplies, and groundwater by controlling soil erosion and managing stormwater runoff from developed areas. A permit is required whenever a project proposes to disturb more than 100,000 square feet of contiguous terrain (50,000 square feet, if a portion of the project is within the protected shoreland, 250 feet of a stream). In addition to these

larger disturbances, the Permit by Rule applies to smaller sites. These initiatives were driven by non-CZM efforts.

There have been significant changes since the last assessment in the Education and Outreach management category. Established by RSA 485-E in the 2009 legislative session, the Southeast Watershed Alliance (SWA) is a regional organization of municipalities in New Hampshire's coastal watershed intended to enable and empower communities to join together to find cost-effective and creative ways to improve water quality. The mission of the SWA is to establish a regional framework for coastal watershed communities, regional planning commissions, the state and other stakeholders, to collaborate on planning, and implementation measures to improve and protect water quality and more effectively address the challenges of meeting clean water standards, particularly with respect to nutrient pollution. The SWA created a planning committee to develop operating procedures and propose a board of directors and an organizational structure. The bylaws were approved in June. DES is providing initial coordination support for the Alliance, as required by the state legislation. DES will pass the torch to the municipalities once the Alliance is formed (SWA, 2010). This was driven by CZM.

There have been significant changes since the last assessment in the Research, assessment, and monitoring management category. DES recently completed an assessment of the Great Bay estuary for nutrient-related parameters, in accordance with the estuary nutrient criteria published in June, 2009. The assessment results show that most of the estuary does not meet the criteria for nitrogen concentration for aquatic life. DES added these waters to the 2008 303(d) list of impaired waters. An impairment of water quality standards necessitates the DES and Environmental Protection Agency (EPA) to restrict additional loading to the water body. Both federal and state law requires that water quality criteria be attained. The primary federal mechanism for attaining criteria is the National Pollutant Discharge Elimination System (NPDES) permit program. The program, administered by EPA Region 1 in New Hampshire, currently covers wastewater treatment facilities and stormwater in urban compact areas. It has the potential to cover all stormwater discharges through "residual designation." State Law (RSA 485-A:12.II) gives DES authority to require pollution abatement of "the person or persons responsible for the discharging of such pollution." CZM was a significant participant in this change.

The EPA will also focus on wastewater National Pollutant Discharge Elimination System permits, establishing limits on nutrient output. These permits are likely to require nitrogen removal to between 3 mg/l and 8 mg/l. However, this limit will not be enough to meet water quality standards, so other sources must be reduced. DES has several methods at its disposal to carry-out the requirements for nutrient reductions. Largely this will be accomplished by the use of water quality certifications on permitted projects. Other methods may be used depending on the source and location of the pollution.

On May 14, 2007 Governor Lynch signed HB 216 (Chapter 31, Laws of 2007) establishing a commission to study the causes, effects and remediation of siltation in the Great Bay Estuary. The commission's duties include, in part, studying the historic and current sources of siltation in the estuary, studying the impacts of siltation upon the aquatic and riparian ecosystem, studying the recreational, social, and commercial uses of estuarine waters, studying

methods of minimizing additional siltation, and evaluating the desirability of remediation. The NHCP contributed to the legislation, led much of the subcommittee efforts and staffed the commission.

D. 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)
The Wetlands Department does not currently regulate secondary impacts, permits are only required for direct impacts from development.	Regulatory and policy	Moderate
Development of a chapter in the DES Strategic Plan to address nutrient regulations with the inclusion of provisions for non-point sources of pollution.	Training, capacity, communication & outreach	High
Develop new regulations for placement of moorings within estuarine waters that required approval by DES.	Regulatory and policy	Moderate
Develop new regulations and/or a DES policy on dam removal.	Regulatory and policy	High

E. 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.

Cumulative and secondary impacts of development can be both difficult to identify and evaluate. These impacts may be insignificant by themselves but when combined with other development activities may become a significant problem over time. The Coastal Program believes that the continued support for developing regulation such as limits on nutrient output, as part of the estuary nutrient criteria published in June, 2009, would benefit from 309 involvement. The NH Coastal Program has chosen a priority level of high for this enhancement area to foster future improvements.

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.

Cumulative and secondary impacts of development have been determined to be a high priority area within the coastal zone, and would greatly benefit from 309 involvement. Of particular concern to the Coastal Program is the development of a chapter in the DES Strategic Plan to address nutrient regulations related to non-point sources of pollution within estuaries. Additional concerns have been raised that there is the need for the development of new regulations for the placement of moorings within estuarine waters to ensure that shellfish and eel grass resources are not impacted, and to consistently evaluate dam removal projects. The Coastal Program feels these efforts can be strengthened with 309 involvement and the development of a strategy directed at these areas.

VI. SPECIAL AREA MANAGEMENT PLANNING

A. 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."

B. 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 SAMP 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?
Offshore waters	Offshore structures competition for area used for commercial fishing and the loss of marine habitat.	Emerging
Great Bay National Wildlife Refuge	Habitat management for various species.	Long-standing
Great Bay Estuary watershed,	Resources management, living	Long-standing

Geographic Area	Major Conflicts	Is This an Emerging or a Long-Standing Conflict?
Hampton-Seabrook Estuary watershed and the Atlantic Coast	resources and habitat restoration, and land use and habitat protection.	
Estuarine waters	Competing use of the waters for shellfish harvest versus recreational boating.	Long-standing
Great Bay Estuary	Habitat loss due to nutrient loading.	Emerging
Beaches, stated and town owned	Differences in sand deposition and erosion leading to costs in nourishing or removing sand from beaches	Long-standing

C. 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
Great Bay National Wildlife Refuge Comprehensive Conservation Plan	In Progress	N/A
2010 Piscataqua Region Estuaries Partnership Comprehensive Conservation and Management Plan Update.	In Progress	N/A
Various Shellfish Program "Conditional Area Management Plan[s]" covering the specific shellfish management areas.	Revised	June, 2009
Hampton-Seabrook Estuary Habitat Restoration Compendium.	New	2009
Great Bay Estuary Restoration Compendium.	New	September, 2006
The Land Conservation Plan for New Hampshire's Coastal Watersheds.	New	August, 2006
New Hampshire Coastal and Estuarine Land Conservation Protection Plan.	New	June, 2008
Isinglass River Management Plan	New	June, 2008
Lamprey River Management Plan for the towns of Durham, Epping, Lee, and Newmarket.	New	May, 2008

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.

The State and its federal and local partners have a number of processes in place to proactively manage resources. So far these have been adequate to address potential conflicts without the need for a formal SAMP. These management processes include the following:

Published in 2009 the Hampton-Seabrook Estuary Habitat Restoration Compendium is a compilation of information on the historic and current distributions of salt marsh and sand dune habitats and diadromous fishes within the Hampton-Seabrook Estuary watershed. This compendium was funded by the NOAA Restoration Center in conjunction with the Coastal Program and New Hampshire Estuaries Project. The compendium is a tool to help communities and organizations restore sand dunes, salt marsh, and diadromous fish in the Hampton-Seabrook Estuary Watershed. The compendium presents a narrative describing the methods used and the results of analyses, a series of maps detailing change in sand dune and salt marsh extent over time, the current and historic distribution of seven target diadromous fish species, and identifies examples of prominent restoration opportunities within the watershed (Eberhardt and Burdick, 2009). This effort was CZM driven.

The Great Bay Estuary Restoration Compendium was developed in 2006 by The Nature Conservancy with funding from the Coastal Program and New Hampshire Estuaries Project. The Compendium is a tool to help communities and organizations restore eelgrass, salt marsh, diadromous fish, and shellfish in the Great Bay Watershed. The Compendium has two components, a report and a GIS database. The report provides maps and detailed descriptions on areas of concern to help set future restoration goals and aid project development (Odell et al. 2006). This effort was CZM driven.

The Land Conservation Plan for New Hampshire's Coastal Watersheds was published in August 2006. Funding for this plan was provided by the Coastal Program and New Hampshire Estuaries Project. The land conservation plan prioritizes coastal watershed areas and offers regional strategies for maintaining diverse wildlife habitat, abundant wetlands, clean water, productive forests, and outstanding recreational opportunities into the future. It was created with public input from a range of stakeholders including citizens, scientists, conservation organizations, and natural resource agencies. The plan enables communities, land trusts, and agencies to better understand how local and regional conservation activities can add up to a functional network of conservation land and waters. The plan is not intended to supplant other plans that address conservation and natural resource issues in the region, but rather to augment and complement (Zankel et al. 2006). This effort was CZM driven.

The New Hampshire Coastal and Estuarine Land Conservation Protection Plan (NHCELCP) was developed by the Coastal Program and published in June 2008. The NHCELCP program has adopted the same focus as the national Coastal and Estuarine Land Conservation Program (CELCP), which includes important coastal and estuarine areas that have significant ecological, conservation, recreation, historical, or aesthetic values. The NHCELCP was formulated using two distinct processes, one for the ecological and conservation values and one for the recreation, historical and aesthetic values. This New Hampshire plan focused on ecological and conservation values as the priorities for CELCP funding with recreational, historic and aesthetic values playing a supporting role. On an annual basis the Coastal Program solicits projects that are consistent with the priorities outlined in the NHCELCP plan. Projects

are then nominated to the national level where they will undergo the selection process for CELCP funding (Diers, 2008). This effort was CZM driven.

The Strafford Regional Planning Commission completed the Isinglass River Management Plan in June 2008. Funding was provided by the DES Rivers Management and Protection Program. The management plan addresses environmental and land use issues within the river corridor and watershed. The River Management Plan identifies short-term, intermediate and long-term goals for river and watershed protection along with strategies to address them. The Implementation and Action Plan organizes the priority issues, actions, and strategies in a timeframe that allows for effective and timely implementation. The Isinglass Local Advisory Committee (IRLAC) will advocate for implementation of the River Management Plan and support integration of its goals and strategies by the corridor communities in their master plans, resource-based planning initiatives and land use decisions (SRPC, 2008). This effort was CZM funded.

The Lamprey River Management Plan for the towns of Durham, Epping, Lee, and Newmarket was developed to create a framework for successful long-term use and protection of the Lamprey River. The plan was published in May 2008. It attempts to define a future for the river which respects the legitimate interests of property owners while recognizing that the river is an important community resource with fish and wildlife habitats of statewide significance. The content of this Plan is based upon public input, technical research, practical realities, and the best judgment of the Lamprey River Advisory Committee (LRAC, 2008).

D. 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)
Organize a discussion with Maine and Massachusetts Coastal Programs over the development of a regional SAMP focusing on wind energy and/or nutrient regulations.	Communication and outreach	Moderate
Development of a Hampton-Seabrook Estuary Comprehensive Management Plan.	Data, capacity and communication	Moderate
Development of a SAMP for the protection of eel grass habitat in the Great Bay estuary.	Regulatory	Moderate

E. 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 analysis of this Enhancement Area does not identify any high priority gaps or needs in the issue of special area management planning. The State and its federal and local partners have a number of processes in place to proactively manage resources, which are adequate to address potential conflicts without the need for formal SAMPs. Funding from the Coastal Program enables these activities to happen. For these reasons the NH Coastal Program has chosen a priority level of medium for this enhancement area.

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.

As stated above, the State and its partners have a number of processes in place to proactively manage resources without the need for formal SAMPs; therefore a strategy will not be developed at this time. Coastal Program 309 staff will continue to work in this enhancement area and will collect information to identify whether future program changes are needed.

VII. OCEAN RESOURCES

A. Section 309 Enhancement Objective

Planning for the use of ocean resources

B. 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 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
Fisheries	Stock depletion Disturbance to bottom from trawling	High	Ecosystem changes; negative impacts to local economies.
Sand and gravel	Mining	Low	Environmental impacts, habitat disturbance.
Drilling and transportation of oil and gas	Degradation of water quality and benthic substrate	Low	Habitat degradation, interference with migratory marine mammals, impacts on native species.
Cables and Pipelines	Degradation of water quality and benthic	Low	Habitat degradation, interference with

Resource or Use	Threat or Use Conflict	Degree of Threat (H,M,L)	Anticipated Threat or Use Conflict
	substrate		migratory marine mammals, impacts on native species.
Open ocean aquaculture	Competing uses of ocean resources	Medium	Habitat degradation, interference with migratory marine mammals, impacts on native species.
Wind energy	Competing uses of ocean resources	Unknown	Interference with fishing, birds, marine habitat.
Tidal Energy	Competing uses of ocean resources	Unknown	Habitat degradation, interference with fishing, impacts on native species.

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

The coastal area has become the focus of alternative energy development over the last several years. The Coastal Program believes that alternative energy development as well as new ocean uses will continue to increase in the immediate future. Currently both Maine and Massachusetts have received several liquefied natural gas terminal proposals. Massachusetts has also received an offshore wind energy proposal. New Hampshire has yet to receive similar proposals; however, with neighboring states receiving proposals, it is in the best interest of the state to build the capacity necessary to address any that are received. As discussed in Section IX. Aquaculture, there has been an increase in commercial open ocean aquaculture ventures within New Hampshire. These and other new uses will have an unknown impact on current uses and resources.

C. 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 management plan or system of Marine Protected Areas	No	No
Regional comprehensive ocean management program	No	No
Regional sediment or dredge material management plan	No	Yes
Intra-governmental coordination mechanisms for Ocean management	Yes	No
Single-purpose statutes related to ocean resources	No	No
Comprehensive ocean management statute	No	No
Ocean resource mapping or information system	Yes	Yes

Management Categories	Employed by State/Territory (Y or N)	Significant Changes Since Last Assessment (Y or N)
Ocean habitat research, assessment, or monitoring programs	Yes	No
Public education and outreach efforts	Yes	No
Other (please specify)	N/A	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.

Since the last assessment, the issues surrounding ocean resources have grown more important. Certainly the creation of SIMOR by the Bush administration and the Ocean Policy Task Force by the Obama Administration has raised the profile of ocean policy at the Federal level. Ocean planning in our neighboring states is raising the stakes for NH participation. One area of particular importance is dredge disposal areas. A significant development has been the closure of the Cape Arundel Disposal cell in southern Maine. This was the only offshore disposal option for the state. Since that closure in 2009, the state has been working with the Army Corps to identify resources for the siting of regional disposal option. This issue is likely to dominate conversations between Maine, the ACOE and NHCP for a number of years.

New Hampshire has had a significant change since the last assessment in the management category of ocean resource mapping. As a member of the Gulf of Maine Council on the Marine Environment, the Coastal Program has participated in the Gulf of Maine Mapping Initiative (GOMMI). GOMMI is a U.S.-Canadian partnership of government and nongovernmental organizations working to conduct comprehensive seafloor imaging, mapping, and biological and geological surveys. GOMMI grew out of a mapping workshop held in October 2001 that was sponsored by the Gulf of Maine Council on the Marine Environment and the National Oceanic and Atmospheric Administration. The Gulf of Maine Council endorses GOMMI, and the GOMMI Steering Committee is a subcommittee of the Council. GOMMI has updated their 2004 strategic plan (2006-2008), and is working to secure funding and conduct a mapping program of areas in the Gulf of Maine not already mapped by multibeam sonar surveys.

D. 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)
Development of a Coastal Marine Spatial Plan to assist the state in citing renewable energy facilities, managing resources, and allowing for commercial use.	Regulatory and Policy	High
Acquisition of LiDAR for the entire coastal watershed	Data	High
Post processing of LIDAR (Light Detection and Ranging) imagery for specific uses within the coastal zone.	Data	Moderate

E. 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 in Section VII, the coastal zone has become the focus of alternative energy development over the last several years. The Coastal Program believes that alternative energy development as well as new ocean uses will continue to increase in the immediate future, and it is in the best interest of New Hampshire to build the capacity necessary to address this imminent utilization of ocean resources. For these reasons the NH Coastal Program has chosen a priority level of high for this enhancement area to foster future policies and program development through Section 309 involvement.

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.

Because the Coastal Program has determined that ocean/great lakes resources are a high priority area for the coastal zone, a strategy will be developed to foster further improvements to regulations and policies related to ocean resources. Specifically the development of a Coastal Marine Spatial Plan to assist the state in citing renewable energy facilities, managing resources, and allowing for commercial use would be strengthened with Section 309 involvement.

VIII. ENERGY & GOVERNMENT FACILITY SITING

A. Section 309 Enhancement 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

B. 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 facilities	Yes	No	No	No
Pipelines	Yes	Yes	Yes	No
Electric transmission cables	Yes	No	No	No
LNG	No	No	No	No
Wind	No	No	Yes	No
Wave	No	No	No	No
Tidal	No	Yes	Yes	Yes
Current (ocean, lake, river)	No	No	No	No
OTEC	No	No	No	No
Solar	No	No	No	No
Other (please specify)	N/A	N/A	N/A	N/A

2. 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.

In June 2007, Governor Lynch signed HB 694 (Chapter 222, Laws of 2007), establishing a tidal energy commission to study the feasibility of tidal power generation, specifically in the Piscataqua River under the Little Bay and General Sullivan Bridges. The commission was comprised of representatives from the New Hampshire House of Representatives and Senate, state agencies, the municipalities of Dover and Newington, the University of New Hampshire, the New Hampshire Commercial Fishermen's Association, the National Marine Fisheries Service, environmental protection and advocacy organizations, and the general public.

At its inaugural meeting in August 2007 the commission elected co-chairs, former Rep. Thomas Fargo from Dover, and Kenneth Baldwin, representing the University of New Hampshire,

as well as a vice chair, Ted Diers, representing the Coastal Program at DES. The commission also selected the Coastal Program to coordinate the efforts of the commission.

The commission met 11 times over the course of a year with its four subcommittees working between meetings. The subcommittees focused on the following subject areas: permitting requirements; public and business community outreach; environmental and wildlife impact analysis; and cost and benefits analysis. After a year's worth of scrutiny of the site's unique conditions and the state of the technology, the commission determined that it was premature to build a commercial tidal energy project under the Little Bay and General Sullivan Bridges. The commission found that currently available tidal energy technologies are too new at this point to warrant installation and require further research on their suitability for tidal rivers with multiple commercial and recreational uses like the Piscataqua. The commission determined that the Piscataqua River site would be an ideal place to further test these technologies, and the University of New Hampshire is taking the lead on the testing.

3. 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.

New Hampshire does not currently have estimates of existing in-state capacity and demand for natural gas and electric generation.

4. 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.

The New Hampshire Office of Energy and Planning (OEP) provides information, data and guidance to assist decision makers on issues pertaining to development, land protection, energy use and community planning. The OEP guides the state's future growth through public policy development, education, research, and partnership building. The OEP has two Programs which specifically oversee alternative energy development, the Renewable Energy Program and the Alternative Fuels Program. OEP has a broad goal to obtain 25% of its energy from clean, renewable sources by the year 2025, as part of the 25 x '25 Renewable Energy Initiative.

5. 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.

There have been no changes in the types or number of government facilities sited in the coastal zone since the last assessment.

C. Management Characterization

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

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.

Yes, New Hampshire has enforceable policies specifically related to energy facilities. New Hampshire Revised Statutes Annotated (RSA) 162-H Energy Facility Evaluation, Siting, Construction and Operation specifically addresses enforceable policies related to energy facilities.

The New Hampshire legislature recognizes that the selection of sites for energy facilities, including the routing of high voltage transmission lines and energy transmission pipelines, will have a significant impact upon the welfare of the population, the location and growth of industry, the overall economic growth of the state, the environment of the state, and the use of natural resources. Accordingly, the legislature finds that it is in the public interest to maintain a balance between the environment and the need for new energy facilities in New Hampshire; that undue delay in the construction of needed facilities be avoided and that full and timely consideration of environmental consequences be provided; that all entities planning to construct facilities in the state be required to provide full and complete disclosure to the public of such plans; and that the state ensure that the construction and operation of energy facilities is treated as a significant aspect of land-use planning in which all environmental, economic, and technical issues are resolved in an integrated fashion, all to assure that the state has an adequate and reliable supply of energy in conformance with sound environmental principles. The legislature established RSA 162-H in order to create a method for the review, approval, monitoring, and enforcement of compliance in the planning, siting, construction, and operation of energy facilities.

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	Yes	Yes
Policies	Yes	Yes
Program guidance	Yes	Yes
Comprehensive siting plan (including SAMPs)	No	No
Mapping or GIS	No	No
Research, assessment or monitoring	Yes	Yes
Education and outreach	Yes	Yes
Other (please specify)	N/A	N/A

3. 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.

New Hampshire has had a significant change since the last assessment in the management category of Statutes or Regulations. Effective July 17, 2007 RSA 162-H:6-a expedited the process

for review of renewable energy facilities. The RSA requires that within 240 days of the acceptance of an application, the subcommittee shall issue or deny a certificate for a renewable energy facility. This initiative was driven by non-CZM efforts. However, CZM staff participated in a subcommittee looking at wind siting criteria.

New Hampshire has had a significant change since the last assessment in the management category of Policies. New Hampshire participates in the Regional Greenhouse Gas Initiative (RGGI) which is a cooperative effort by ten Northeast and Mid-Atlantic states to limit greenhouse gas emissions. RGGI is the first mandatory, market-based CO_2 emissions reduction program in the United States. New Hampshire is one of ten signatory states to the RGGI agreement. These ten states have capped CO_2 emissions from the power sector, and will require a 10 percent reduction in these emissions by 2018. Each of the participating states has its an individual CO_2 Budget Trading Program. New Hampshire regulates its program through its Administrative Rules, Chapter Env-A 4600: CO2 Budget Trading Rule and Chapter Env-A 4800: CO2 Allowance Auction Program Rules, which are based on a RGGI Model Rule. Regulated power plants can use a CO_2 allowance issued by any of the ten participating states to demonstrate compliance with the state program governing their facility. Taken together, the ten individual state programs function as a single regional compliance market for carbon emissions. In August, 2006, the states published a model rule to assist any participating state in implementation of RGGI. The model set of regulations detailed the proposed program and served as the basis for individual state regulatory and/or statutory proposals. The first compliance period for each state's linked CO_2 Budget Trading Program began January 1, 2009 (RGGI, 2009). This initiative was driven by non-CZM efforts.

New Hampshire has had a significant change since the last assessment in the management category of Program Guidance. Governor John Lynch announced the 25 x '25 Renewable Energy Initiative in August of 2006. The goal of 25 x '25 is for New Hampshire to obtain 25% of its energy from clean, renewable sources by the year 2025. The 25 x '25 Plan is being developed jointly by the Office of Energy and Planning and the Department of Environmental Services, in coordination with Innovative Natural Resource Solutions LLC, a New Hampshire-based consulting firm. The plan is currently still under development. This initiative was driven by non-CZM efforts.

New Hampshire has had a significant change since the last assessment in the management category of Research, Assessment or Monitoring. As described above under Section VIII. B. the Tidal Energy Commission determined that the Piscataqua River site would be an ideal place for hydrokinetic technology testing and development. The commission encouraged researchers at the University of New Hampshire (UNH) to pursue such activities with the support of collaborators represented by the membership of the Commission, and has taking the lead on the testing. This initiative was driven by non-CZM efforts, however, the CZM co-chaired the Commission once it was formed.

On February 23, 2007 the New Hampshire Coastal Program (NHCP) and the New Hampshire Office of Energy and Planning hosted a Tidal Energy Workshop at the NHCP Office in Portsmouth. The purpose of the workshop was to provide state, local and federal resource agency staff, regional planning commissions, municipalities, and state legislators and Congressional staff from New Hampshire and Maine with an overview of the technology of tidal

energy and an understanding of the many uses and resources of the Piscataqua River. The meeting was also intended to provide insight into the Federal Energy Regulatory Commission's preliminary permit process for tidal energy projects and the process of energy facility evaluation, siting, construction and operation in New Hampshire. The workshop was held in light of two preliminary permit applications before the Federal Energy Regulatory Commission for tidal energy projects in the Piscataqua River in New Hampshire and Maine state waters.

D. 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)
Improved mapping to identify potential sites for renewable energy systems.	Data	High

E. 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 analysis of this enhancement area does identify at least one high priority gap or need in the issue of Energy and Government Facility Siting. However, there have been substantial improvement since the last assessment in the development of statutes, regulations, policies and program guidance's related to energy and government facility siting, which are adequate to address present concerns. In addition, the primary need, offshore planning and mapping, is being covered in Ocean Resources, which is a high priority area. For these reasons the NH Coastal Program has chosen a priority level of medium for this enhancement area.

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.

As stated above, the State has a number of new processes in place to adequately manage the siting of energy and government facilities. Additionally, the Coastal Program will develop a strategy for the development of a Coastal Marine Spatial Plan as part of the ocean/great lakes resources enhancement area. Part of this plan will include details on citing of renewable energy facilities; therefore a strategy will not be developed at this time. Coastal Program 309 staff will continue to work in this enhancement area and will collect information to identify whether future program changes are needed.

IX. AQUACULTURE

A. 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

B. 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
Bottom culture of American Oyster, free of attachment, and held in bottom trays.	One (1.5 acre) operation utilizing this method has been permitted since 2007.	Operation has the potential to impact existing eel grass beds. Use conflict exists between the expansion of mooring fields, which under certain conditions could exclude shellfish harvest. Wetland permit and fee required for area permitted for use by Fish & Game. Fee could make a commercial venture non-viable.
Bottom culture American Oyster, some free of attachment, and others on cultch.	One (5 acre) operation utilizing this method has been permitted since 2000. Initiated as a demonstration project through the University of New Hampshire, the operation was later developed into a commercial venture.	Operation has the potential to impact existing eel grass beds. Use conflict exists between the expansion of mooring fields, which under certain conditions could exclude shellfish harvest. Wetland permit and fee required for area permitted for use by Fish & Game. Fee could make a commercial venture non-viable.
Open ocean culture of blue mussel using the submerged long-line method	Two operations utilizing this method have been permitted since 2004. Although separate permits are issued, this (5.5 acre) operation is a joint venture which is managed and harvested by one company.	Use conflict exists between commercial lobsterman and aquaculturists for use of area.

Type of Existing Aquaculture Facility	Describe Recent Trends	Describe Associated Impacts or Use Conflicts
Open ocean culture of blue mussel using suspended shellfish containers "socks"	One (1.1 acre) operation utilizing this method has been permitted since 2000. Initiated as a demonstration project through the University of New Hampshire, the operation was later developed into a commercial venture. Although still actively permitted this site has not been used in the last few years.	Use conflict exists between commercial lobsterman and aquaculturists for use of area.
Open ocean fin-fish grow out operation	One operation utilizing this method. Atlantic cod, haddock, halibut, and flounder have been raised since 1999 by the researchers from the University of New Hampshire. This is a demonstration site consisting of four fish cages. The site is used to test equipment and aquaculture techniques. As of 2009 the project no longer has a commercial aquaculture permit. Their new scientific permit prohibits the selling of their product.	None.
Land-based commercial marine fin-fish hatchery	One operation utilizing this method. Juvenile summer flounder, cod, black sea bass, and cobia have been raised at this facility which began operation in 1995. This operation raises juvenile fin-fish which are sold to commercial grow out operations around the world.	None. Water used in their flow through system is treated prior to discharge.
Bottom culture of sea urchins	One (2 acre) operation utilizing this method has been permitted since 1998.	Use conflict exists between commercial lobsterman and aquaculturists for use of area. Possible wetland permit and fee required for area permitted for use by Fish & Game. Fee could make a commercial venture non-viable.
Oyster Conservationist Program	Begun in 2006, volunteers with access to a suitable dock raise oysters in floating cages that will ultimately be used to restore historic reefs in the Great Bay estuary. Volunteers are trained to care for young oysters (spat) and raise them to the size needed for placement at restoration sites in the estuary. The program is a collaboration between The Nature Conservancy, The University of New Hampshire and New Hampshire Sea Grant. The program deploys approximately 15 cages per year.	None.

C. 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	Yes	No
Aquaculture policies	No	No
Aquaculture program guidance	Yes	No
Research, assessment, monitoring	No	No
Mapping	No	No
Aquaculture education & outreach	No	No
Other (please specify)	N/A	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.

Although there have been no significant changes in the aquaculture management categories since the last assessment there has been a lot of interagency discussion concerning aquaculture, specifically shellfish aquaculture. Currently a permit and fee are required by Fish & Game in order to operate an aquaculture operation. A wetland permit and fee are also required for bottom culture operations permitted for use by Fish & Game. There has been a lot of uncertainty and questions over the last few years concerning the need for both state agencies to regulate bottom culture aquaculture operations. There has also been concern that the fee structure could make some commercial venture non-viable. Work is underway to develop a common understanding of the procedures required and processes for aquaculture permit applicants.

D. 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)
Develop new regulations for bottom culture shellfish aquaculture to streamline the process of obtaining permits from several state agencies.	Regulatory, policy and outreach.	Moderate
Develop a guidance document for individuals	Capacity, communication and	Moderate

Gap or Need Description	Type of Gap or Need (regulatory, policy, data, training, capacity, communication & outreach)	Level of Priority (H,M,L)
and businesses interested in establishing an aquaculture ventures. The guidance would provide a synopsis of the permits required as well as the restrictions to harvest regulated by the Shellfish Program.	outreach.	

E. 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.

Over the last few years there has been an increase in the number of commercial shellfish aquaculture ventures in New Hampshire. With the growth of this new industry it has come to the attention of some regulating agencies that the current laws and guidance's need to be reexamined and possibly amended so they do not duplicate authority and fees do not overly burden the business owner. It is the understanding of some groups that the current regulations do not regulate all types of aquaculture equally and the fees associated with some types of aquaculture operations may result in a non-viable industry in New Hampshire. For these reasons medium priority has been given to this enhancement area.

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.

As stated above, the State has a number of laws and statutes governing aquaculture operations; therefore a strategy will not be developed at this time. Coastal Program 309 staff will continue to work in this enhancement area and keep tabs on the current understanding and opinions of the state agencies involved in the regulatory process. If and when agency understanding or opinions change on the issue of aquaculture the Coastal Program will consider developing a strategy to consider a future statute/rule change.

GENERAL STRATEGY FOR SECTION 309 ENHANCEMENT AREAS

1. Integrated Land Resource Permitting and Wetlands Improvement

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 Lakes 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

In Fall 2010, the DES Wetlands Bureau began working on a Wetland Program Plan, essentially a strategic plan for addressing issues with wetlands. This is an EPA requirement for receipt of certain funding and will drive program improvement in the wetlands program. In order to prepare the plan, the DES brought together the various programs from within DES that relate to wetlands, along with the NH Department of Fish and Game, and the NH Department of Transportation to discuss shared goals, and the actions and activities deemed necessary to reach them. As part of the plan NH identified five core program elements for the wetlands planning process. Within each of these elements, the plan defines a set of activities, which are described below. The adoption of the plan itself will constitute a significant change in the funding relationship between DES and USEPA. By virtue of that funding it will lead directly to changes

in enforceable policies and program guidelines. A few examples of those include: streamline the permit process (a change is currently in the works to alter the way applications are submitted); prioritization of protection and restoration; improved mitigation (including adopting the new Army Corps guidelines); revised fee structure; improved data to assess wetland condition and to track wetland impacts (as required by the CZMA Performance Measurement System); and focused outreach. The Wetland Program Plan will be approved by EPA in December 2010.

Two other program changes are currently in the works. 1) The NHCP is now working on a pilot project with the Wetlands Bureau on an integrated compliance process that works across many different programs. This too may yield a significant program change in the coming years. 2) A program change will be to adapt Stream Crossing design criteria (in administrative rule) for tidal waters.

Finally, the need for uniform data practices and parallel approaches for tracking impacts by all permitting programs under the Land Resource Management Program at DES (Wetlands, Subsurface, Alteration of Terrain and Water Supply) is great. This will be a significant undertaking that would dramatically change the way that permit applications could be analyzed and coordinated between current regulatory "silos". This will require more funding that is currently in Section 309 so it would likely be a project of special merit application. If it were successful it would create new guidelines for state approval of permits and probably incorporate cumulative and secondary impacts in a new way.

In summary, this strategy has identified four program changes, three of which are new or being developed in this strategy and one that is being implemented in this strategy.

1. EPA adopts NH Wetland Program Plan. This will control funding from EPA to DES. This strategy will **implement** the elements of that plan.
2. Pilot project on integrated compliance in the Land Resource Management Program at DES. The pilot project will set up the possibility of a new set of procedures implemented statewide on permit compliance. This activity **develops** new procedures.
3. Adapt Stream Crossing design criteria for tidal crossings. This activity **develops** new design criteria that must be followed by CZM applicants to the state agency.
4. Create a set of new guidelines to be followed by state permitters for Land Resource Management Programs that allowed for incorporation of all previous permits and actions on a site. The activity would **develop** a new guideline.

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

The program changes listed above have been identified as necessary by five initiatives: 1) the assessment results in this document; 2) the need to track landscape impacts in the NOAA Performance Measurement System; 3) the creation of an Integrated Permitting Initiative at DES; 4) the development of the New Hampshire Wetland Program Plan; and 5) the Piscataqua Region Estuaries Partnership (PREP) comprehensive management plan.

The New Hampshire Wetland Program Plan summarizes the activities of each of these initiatives very well, which is not surprising given that many of the same people participated.

Below are the Actions that have been incorporated into the Wetlands Program Plan.

Regulation and Enforcement Actions

- Improve and strengthen enforcement efforts by increasing field presence, more-effectively addressing complaints, and initiating landscape level investigation
- Streamline and improve permit process
- Pursue regulatory and program changes to improve wetland protection

Restoration and Protection Actions

- Prioritize and coordinate protection and restoration efforts
- Use data to inform regulatory decisions related to mitigation – *replaced with*
    - Develop new and use existing tools and science to inform regulatory
    - decisions (Project Review - Overlap with regulation section)
- Effectively mitigate impacts to wetlands and aquatic resources *(moved from reg. and enf) and replaced with-*
    - Continue development of ARM fund Program to mazimize efficiency of
    - program and the use of funds for ecologically sustainable projects
- Build capacity at the local level to enhance protection efforts

Data/ Monitoring and Assessment/Water Quality Standards

- Develop GIS-based Statewide Mapping (this is Level One Assessment)- *replaced with* Develop GIS-based waterbody Catalog that fully includes wetland and can be updated as new information becomes available
- Develop Monitoring and Assessment Program (Levels Two & Three*)- replaced with* Level II Assessments – Incorporate NH method concepts and volunteers can do it.
- Develop metrics and field protocols for restoration/protection
- Permitting and Enforcement Database and E-permitting

Sustainable Financing

- Develop strategy to revamp the fee and funding structure – goal of making Wetlands Bureau more financially stable. *Replaced with*
    - Re – evaluate the fee and fine structure.
- Identify and pursue other opportunities for program funding
- Create Sustainable Funding Mechanism (replaced?)
- Leverage and support local efforts to fund wetland protection (replaced?)

Outreach/ED

- Coordinate wetland message into other water division outreach
- Develop volunteer Corps for Wetland Outreach
- Enhance and integrate outreach, education, and technical assistance to municipal officials, conservation commissions, and watershed organizations.
- Influence and inform local decision making
- Increase effectiveness of partnerships

Other Actions

- *Data management* -- Various constituents from information technology, planning and permitting all came together in May 2010 to develop a proposal for much of this work through the **FY2010 Competitive Grants for Modernizing and Improving State Coastal Zone Management Information Systems.** This was to address the identified need that the wetlands permitting database is very old and that it does not communicate with other databases for other Land Resource Management programs or with the compliance database. If this activity were to take place, the disparate permitting processes in the seacoast area would begin to use the same data for decision-making, and more importantly, understand the cumulative impacts to wetlands and waterways. All the permitting programs under the Land Resource Management Program at DES (Wetlands, Subsurface, Alteration of Terrain and Water Supply) would use the same data practices and similar approaches to track impacts. Finally, the public and developers would have access to this same data. This will be recommended as a project of special merit because of its large scope. As additional PSM project would be to conduct a pilot project to use remotely collected data (satellite and aerial photos) to search for wetlands violations.

- Stream Crossing -- Last year, DES released a new set of Stream Crossing rules. This completely revised the way that culverts and bridges are designed for the state. We discovered after the rules were approved that they should not apply to tidal creeks and rivers because the design procedure falls apart with tides. A program change will be to adapt the design criteria for tidal waters.

IV. Benefit(s) to Coastal Management

All of these changes will help to improve coastal management. Wetlands are critical not just for healthy ecosystems but buffer flooding and climate change impacts, protect aesthetics and recreation, and filter water for drinking. Taken together, these improvements continue the trend over the last 5 years of program integration between the regulatory "silos" within DES. NHCP is a key player in this integration. Finally, should the Projects of Special Merit be approved the consequent improvements will provide coastal managers and planners with current information regarding the type and acreage of wetlands impacted in the coastal zone, geographic scope and relative density of projects, and means to identify trends and potential needs for restoration and protection. It will provide the various permitting bodies with a more coordinated approach and method of looking at cumulative impacts.

V. Likelihood of Success

The history of success in carrying-out changes in the Wetlands Enhancement Area is generally good but certainly mixed. Many of the regulatory changes listed above are controversial and difficult to enact. The state of the budget at the writing of this report is dismal. The Land Resource Management programs are hit by both declining revenue from permits due to economic slowdown as well as the increasing pressure on the state budget. This difficulties increases the importance of the NHCP in helping to streamline and improve the program. Finally, the data assessment and collection projects can be successful if funded. As with the introduction of any new computer application there may be a slowdown in productivity in the

short term as staff learn and familiarize themselves with the program's operation. However, the staff are dedicated to keeping the project running and making it an intrinsic part of everyday activity for the agency.

VI. Strategy Work Plan

Total Years: 5
Total Budget: $60,000
Final Outcome(s) and Products:

Year(s): 1
Description of activities:

- Work on tidal criteria for NH Stream Crossing Rules
- Coordinate with DES Wetlands Bureau on compliance integration pilot project.
- Development of Project of Special Merit application

Outcome(s): Project of Special Merit application
Budget: $15,000

Year(s): 2-3
Description of activities:

- Coordinate funded project of special merit for spatial database and web access.
- Work on permit streamlining activities per Wetland Program Plan
- Complete program changes from compliance integration pilot

Outcome(s): Program changes in compliance and permit streamlining, Database system is up and running and tested.
Budget: $30,000

Year(s): 4-5
Description of activities: Implementation of program changes.
Outcome(s): Better agency decision-making.
Budget: $20,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

As a result of public concern about the way DES regulated wetlands, the Legislative Budget Assistant conducted a performance audit of the Wetlands and Alteration of Terrain (AOT) programs. This audit revealed that while these programs are successful in writing high quality permits, the time frames, tracking, and adherence to common procedures should be improved. In a step to improve efficiency the Bureau issued an RFP in 2006 for electronic file archiving, but lack of funding killed the project. Because of the high cost of this project, it will be oriented toward a project of special merit.

B. Technical Needs:

In order to accomplish the creation of a new database a business plan will need to be developed and submitted to the New Hampshire Department of Information Technology. If considered important, staff will be assigned to development of the application.

VIII. Projects of Special Merit (Optional)

- Spatial Database for integrated land use permitting -- Only recently has the capability been developed to query the department's permit database for the purposes of tracking time frames. This is beneficial for enhanced measurement of the Bureau but a more robust database is needed if integration between and among the various permit types is desired. Additionally, the compliance database does not link well to the permitting database and is inadequate for the enforcement staff. A new integrated database must be developed that will allow staff to efficiently and easily conduct their work, ease reporting of activities and trends, and provide the ability for the public to submit electronic permits.

- Pilot project using remotely sense data (satellite and aerial photos) for identification of wetlands violoations.

2. Invasive Species

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 Lakes 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.

C. Description

This project implements a program change from the last section 309 Strategy and develops a further program change related to invasive species control. In the last 309 Strategy, the program change was to create the Memorandum of Understanding that formed the Coastal Watershed Invasive Plant Partnership (CWIPP). That program changes was fulfilled. The work of the 309 program then focused on further program changes and resulted in 2010 change to the state pesticide application rules. This new 309 Strategy focuses on implementing that rule change which added the following:

"Pes 502.01:

(d) For the control of invasive species as listed within Agr 3802.01 NH Prohibited Invasive Species, New Hampshire restricted invasive species as described within RSA 430:53 IV, Common Reed (*Phragmites australis*) or Purple Loosestrife (*Lythrum salicaria)* in the following manner:

(1) Applying a pesticide at any dosage, concentration, or frequency less than that specified in the label;

(2) Applying a pesticide against any target pest not specified on the label if the application

is to the crop, animal, or the site specified on the label, except where the label states the pesticide shall be used only against pests specified on the label; or

(3) Employing any method of application not prohibited by the label."

The pesticide rules enable the development of species-specific control techniques that allow for more efficacious treatment. However, this has never been done, and to date, no specific-specific control techniques have been adopted. The enabling rule is critical because it approved guidelines into enforceable policies for the pesticide program (and CZM by extension). Thus, the program change is the development of guidelines for species specific control techniques.

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

Invasives are literally, and figuratively, a growing problem in New Hampshire. Our state laws are finally starting to catch up with the problem. NH now has a prohibited species list that is very strict and includes prohibitions on transporting noxious plants. What has lagged behind is the legal ability to remove invasives on a large scale. The pesticide application rules are focused on landscape management and agriculture and not on habitat restoration. In addition, the public is not focused on the problem and continue to unknowingly exacerbate the spread of invasives. These gaps around species specific treatment alternative and public outreach will drive this strategy.

IV. Benefit(s) to Coastal Management

Ecosystem restoration has long been a hallmark of the NH Coastal Program and especially the Section 309 program. We have restored over 10% of the tidal wetlands in the state and have at least 10 dam removal projects in the works. One constant issue on both salt marsh restoration and dam removal is encroachment of invasive plant species. These plants can threaten the success of the overall restoration project. Another benefit to coastal management with this task is the building of partnerships and coalitions. A great example is our partnership with the Parks Department at Odiorne State Park. The invasive plant project there not only benefited the coastal ecology, but it solved a problem that the park had with nefarious activity taking place in the dense invasive plant stands. Finally, we are in partnership with the US Fish and Wildlife Service to create a "firewall" at the NH border with Massachusetts for the early detection and rapid response to plant invasions like Perennial Pepperweed. In this way, we are protecting the sensitive ecosystems in Maine and the Canadian Maritimes.

V. Likelihood of Success

Wholesale elimination of invasives from coastal New Hampshire is unlikely in the next 5 years. However, we are building the systems and regulations to set the stage for large scale treatment over the next decades. Given the strong partnership developed with regulators, agency and local NGOs, we feel that we can successful in demonstration projects, small scale invasive removal, regulatory change and public outreach.

VI. Strategy Work Plan

Total Years: 5
Total Budget: $60,000
Final Outcome(s) and Products:

Year(s): 1
Description of activities:

- Support ongoing Coastal Watershed Invasive Plant Partnership (CWIPP) initiatives including: Community Supported Restoration of Odiorne Point State Park.
- Continue early-detection/rapid response strategy to prevent pepperweed from spreading and degrading wetlands in New Hampshire. Continue to collaborate with the state of Massachusetts to prevent the northern spread into the Hampton-Seabrook Estuary.
- Develop a consolidated list of funding opportunities for invasive plant control.
- Pursue demonstration project for a regional roadside Japanese knotweed control.
- Create a trial "Conservation Corps" program to support on-the-ground control projects, foster volunteer initiatives, and provide education.

Outcome(s): Strengthen ties with partners, increase outreach and education, implement on the ground initiatives, and set ground work for policy change.
Budget: $15,000

Year(s): 2-3
Description of activities:

- Sign the second iteration of the CWIPP Partnership Agreement, which expires after five years. Alter the new agreement to identify a fiscal agent, establish greater structure to the steering committee, and recruit new entities as sustaining partners.
- Continue "Conservation Corps" initiative.
- Propose guidelines for rule change to the New Hampshire Division of Pesticide Control. For instance, assist in the development of a new pesticide applicator license category that is specific to invasive plants.
- Consolidate and integrate existing invasive plant spatial data into a geospatial database and support the creation of a Google Maps interface allowing user generated mapping data to depict the distribution of invasive plants throughout the watershed.
- Develop a master list of invasive plants that could be considered as early detection rapid response species. Also classify the spectrum of species in or near NH as not yet present, present with low abundance, and widespread.
- Develop species-specific chemical and non-chemical control techniques and disposal guidelines within New Hampshire's regulatory framework.

Outcome(s): Science based decision making will enable partners to strategically prioritize invasive plant control. Newly enacted rule changes specific to invasive plants (pesticide and shoreland) require additional outreach which will be achieved through materials produced by CWIPP.
Budget: $25,000

Year(s): 4-5
Description of activities:

- Promote the establishment of Cooperative Weed Management Areas throughout the State.
- Promote the concept of dedicated state funding to support on-the-ground invasive plant control.
- Develop and implement training curriculum for Municipal Public Works Departments and the NH Department of Transportation for best management practices for invasive plant control, including training for herbicide applicator licensing;
- Implement new guidelines through outreach, education and demonstration projects.
- Adequately describe the distribution of species and severity of infestations in the coastal watershed in the form of an Invasive Plant Atlas and Management Plan.

Outcome(s): Many of the overly prohibitive rules that inhibited invasive plant control have been changed. Adequate data has been gathered to compile results and make science-based determinations and recommendations. The outcome during this period is providing outreach and training of previous successful program changes and lessons learned to key stakeholders as well as supporting on-the-ground projects.
Budget: $20,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

The NHCP has received funding through the US Fish and Wildlife Service. They have approached us about granting more money to the NHCP. After a great deal of thought, we believe that the Section 309 funds are enough to support the staff time for coordination and facilitation. The true funding need is faced by our NGO and land-owner partners. We will be working with US Fish and Wildlife and other Federal agencies to find resources for our partners to carry-out projects.

B. Technical Needs:

Staff at the NHCP have become expert in invasive plant treatment and outreach. We will continue to improve our knowledge through training and attending conferences. The state of NH has a good many other professionals both in government and the private sector who are willing to provide technical assistance to our program. This was evident in a recent forum which was "standing room only" full of agency staff and professionals sharing information and ideas.

VIII. Projects of Special Merit (Optional)

- Creation of invasive species research center at Odiorne State Park
- Creation of watershed wide database of invasions and responses.

3. Adaptation Program Creation and Support

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 Lakes 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

The NH Coastal Adaptation Workgroup (NHCAW) was formed in 2010 to develop and implement a coordinated strategy for preparing coastal communities for natural hazard and climate change impacts. The workgroup includes members from PREP, Great Bay NERR, DES, Rockingham Planning Commission, NOAA, UNH Cooperative Extension, and the City of Portsmouth. The New Hampshire Coastal Program will seek to develop a Memorandum of Understanding (MOU) between NHCAW and the Coastal Program to facilitate the use of 309 funds and staff time for addressing coastal adaptation. One of the goals of NHCAW is to develop an Adaptation Plan by 2011 that will, in part, identify legislative needs. By entering into an MOU with NHCAW, the Coastal Program will have the ability to facilitate the identification of policy changes, which could later be undertaken by Coastal Program staff. It should be clear that at the time of writing of this strategy, NHCP is a key party to NHCAW but not the chair or staff. GBNERR currently serves as chair and various other agencies participate and provide staff. Other DES staff are also key players. NHCP helps to tie our networked agencies together

on NHCAW and ensure consistency with our enforceable policies. NHCAW has identified a number of potential policy changes, please see the attached document listing those items. These could become program changes over the next few years.

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

In December 2007, Governor Lynch issued Executive Order Number 2007-3, which established a Climate Change Policy Task Force and charged the Task Force with developing a Climate Action Plan for the State of New Hampshire. The Executive Order directed the task force to submit the action plan to the Governor by September 1, 2008. Due to the extensive detail and comprehensive nature of the recommendations in the Climate Action Plan, the final Plan was released on March 25, 2009 at a Press Event with the Governor.

One of the priority actions recommended by the plan is to "develop a Climate Change Adaptation Plan for the State of New Hampshire." The elements of this plan are to include:

- Analyze the environmental consequences of shore protection.
- Promote shore protection techniques that protect habitat.
- Identify land use measures to ensure that wetlands migrate inland as sea level rises in some areas.
- Engage state and local governments in defining responses to sea-level rise.
- Educate decision-makers about the importance of changing zoning regulations.

The development of this plan and a Coastal Adaptation Toolbox fulfills these aspects. In addition, this plan will fulfill requirements for planning entities as part of the State Hazard Mitigation Plan; and assist with the regional planning commissions in their continuing community planning for hazard resilience. NHCAW is being viewed as the coordinating body for this work in the seacoast watershed.

IV. Benefit(s) to Coastal Management

The formal participation in NHCAW will ensure that efforts in the planning for coastal adaptation are not duplicated or overlooked. The resources being developed and the policy changes identified by NHCAW will give coastal communities the resources they need to plan for changes in climate that include storm surges, extreme weather events, coastal flooding and sea level rise.

V. Likelihood of Success

This task has a high likelihood of success based on prior experience. It is through participation on regional councils and working groups that issues are raised, partnerships are built and policy changes are identified. Other state agencies and communities have come to depend on the Coastal Program and 309 staff to participate in planning efforts and to provide coordination. Several challenges exist to the work, especially the issues surrounding communicating with decision-makers and the public about the climate change impacts. To this end, the NHCP is working closely with SeaGrant, Great Bay NERR, and Clean Air-Cool Planet to formulate effective messaging.

VI. Strategy Work Plan

Total Years: 5
Total Budget: $70,000
Final Outcome(s) and Products:

- Memorandum of Understanding with NH Coastal Adaptation Workgroup.
- Coastal Adaptation Plan.
- Identification of state and local policy/program changes needed to address adaptation.

Year(s): 1-2
Description of activities:

- Participate in the development of the Climate Adaptation Plan through NHCAW and create Memorandum of Understanding for all agencies to participate.
- Analyze the environmental consequences of shoreland protection (from NH Climate Change Action Plan).
- Incorporate coastal hazards and sea level rise data into CELCP Plan. Render the existing environment more resilient to weather-related impacts by funding RPCs to continue updating and implementing municipal hazard mitigation plans.
- Implement new program policy to take sea level rise into consideration in all restoration planning projects. Promote shore protection techniques that protect habitat.

Outcome(s): Coordinated approach to adaptation. Fundable plans. Sea level rise considered in land protection and restoration.
Budget: $30,000

Year(s): 3-4
Description of activities:

- Work with the Wetlands Bureau to consider sea level rise planning in mitigation activities. Identify land use measures to ensure that wetlands migrate inland as sea level rises in some areas.
- Work with Natural Resources Outreach Coalition and Regional Planning Commissions to incorporate recommendations for coastal New Hampshire from New Hampshire's Climate Action Plan:
  - Engage state and local governments in defining responses to sea-level rise.
  - Educate decision-makers about the importance of changing zoning regulations.
  - Create a policy for coastal and floodplain properties that plans for residents and structures needing to relocate due to flooding or inundation.
  - Guide future development away from flood prone areas and maintain adequate setbacks.

- Utilize municipal ordinances, building codes, zoning regulations, land use practices, infrastructure planning, and incentives to protect against risks.

Outcome(s): Implemented adaptation plan.
Budget: $30,000

Year(s): 5
Description of activities: Assess progress and determine additional program change needs.
Outcome(s): New program changes for next 309 Strategy.
Budget: $10,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

This is multi-agency project. The primary and critical financial need that is not supported by Section 309 is resources for the regional planning commissions. The RPCs are a vital and trusted link back to the communities. Section 306 funds will help to support RPCs but additional resources through other granting bodies will be needed. NHCAW will be working to identify and apply for those resources.

B. Technical Needs:

The Coastal Program has many of the technical skills to work on this project. However, a key component is the mapping and visualization of current and potential climate change impacts. Many tools now exist for visualization of risk and impacts that could be developed and employed in the New Hampshire coastal zone. This need is a good option for a Project of Special Merit.

VIII. Projects of Special Merit (Optional)

- Visualization tools for current and potential impacts of climate change.
- Shoreline change mapping for New Hampshire.

4. Implementation of Water Quality Legislation

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 Lakes 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

The Southeast Watershed Alliance (SWA) is a regional organization of municipalities in New Hampshire's coastal watershed. It was established by RSA 485-E in the 2009 legislative session with the purpose of improving and protecting the state's coastal water resources through increased intermunicipal cooperation. According to Section 485-E:3 of the legislation, the SWA is separate from the state and includes the New Hampshire municipalities whose boundaries include a portion of the coastal watershed and who have agreed to participate. The SWA focuses on addressing water pollution from multiple sources, including stormwater runoff as well as wastewater. Section 309 funded staff wrote parts of the legislation and coordinated the SWA until June 2010 when it adopted bylaws for its own governance. We consider the adoption of those bylaws as the completion of the program changes which created the SWA. Thus, that date is the starting point for the implementation of that program change. There will be a number of activities associated wit hthe implemention of the SWA workplan such as fertilizer reduction activities, utilizing the Natural Resource Outreach Coalition to help develop consistent local stormwater ordinances, and generally educating the public and local officials about the problems facing our coastal waters.

A second upcoming program change will be the creation of estuarine nutrient criteria. To date, the basis for water quality impairments for nutrient enrichment in NH estuaries has been a narrative criteria. DES is now moving ahead rapidly to set an estuarine nitrogen criteria. NHCP staff have been heavily involved in this process. In 2011, DES will move forward to add the nitrogen criteria to the Administrative Rules which will turn the specific nutrient criteria into an enforceable policy. This is shaping up to be quite a policy battle. The NHCP will provide a vital communications and facilitation role throughout the rulemaking process and beyond in the implementation of this criteria across our networked programs.

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

As noted in the assessment portion of this document. "There have been significant changes since the last assessment in the Research, Assessment, and Monitoring management category. DES recently completed an assessment of the Great Bay estuary for nutrient-related parameters, in accordance with the estuary nutrient criteria published in June, 2009. The assessment results show that most of the estuary does not meet the criteria for nitrogen concentration for aquatic life. DES added these waters to the 2008 303(d) list of impaired waters. … The EPA will focus on wastewater National Pollutant Discharge Elimination System permits, establishing limits on nutrient output. These permits are likely to require nitrogen removal to between 3 mg/l and 8 mg/l. However, this limit will not be enough to meet water quality standards, so other sources must be reduced." The true gap and need is to work with the communities of the watershed to reduce non-point sources of nutrients and turbidity in order to restore eelgrass and shellfish in the estuarine portions of the coastal zone.

The focus of this strategy is on how to leverage the creation of the SWA into true reductions of pollutants throughout the watershed. This will happen in two keys ways, facilitating communication and interaction between communities and development of showcase (or demonstration) projects to highlight best management practices.

The Piscataqua Region Estuaries Partnership recently adopted a new Comprehensive Plan. The NHCP will work with PREP to implement the activities identified in that plan that deal with nutrients and other pollutants of interest. NHDES was signatory to that plan.

The NHCP participated in a legislative commission that examine the causes and effects of siltation to Great Bay. The commission, which ended its work in November 2009, found that there is a huge need for a detailed sediment budget for Great Bay. This would be an expensive proposition but would likely result in a number of program changes to address the growing problem of siltation.

IV. Benefit(s) to Coastal Management

The issues that drive NHCP staff are coastal eutrophication, eelgrass and shellfish loss declines, and increasing regulation on our coastal communities. These issues are unlikely to lose their place at the center of desks anytime soon, and certainly not in the next 5 years.

Finding success in controlling sediment and nutrient runoff will be a consuming challenge but one that will utilize new tools (eg. regulations) and skills (eg. social marketing).

V. Likelihood of Success

While there is disagreement about how much each wastewater treatment plants need to reduce nutrient output, everyone agrees that non-point sources of nutrients and sediment must be reduced for the health of the ecosystem. The Coastal Program is highly encouraged that 30 of the 42 towns in the watershed have voted to join the Southeast Watershed Alliance. This is a decadal scale problem that will take an "all hands on deck" approach. The likelihood of success of finding joint projects and better science in the near-term is very high due to the terrific partnership that the NHCP and others have built. The Coastal Program feels that showcasing new technologies and tools, restoring shellfish and eelgrass, reductions in fertilizer use, and coordination messaging are possible to accomplish in the next five years. The overall probability of success of dramatically reducing pollutants is difficult to predict and depends on factors such as EPA decisions, funding from the Federal government for infrastructure, and market forces that guide development patterns.

VI. Strategy Work Plan

Total Years: 5
Total Budget: $65,000
Final Outcome(s) and Products:

- Implementation of the Southeast Watershed Alliance work plan.
- Implementation of Piscataqua Region Estuaries Partnership (PREP) Comprehensive Management Plan
- Coordinated communication about watershed issues.
- Showcase projects and tools.

Year(s): 1-2
Description of activities:
1) Implement Southeat Watershed Alliance and PREP workplans

- Utilize the Natural Resources Outreach Coalition to develop consistent land-use and water quality related regulations in coastal watershed towns. (Utilize Watershed Assistance resources, e.g. ordinance templates: *Innovative Land Use Guide*).
- Support and advance the Southeast Watershed Alliance through participation in the SWA Advisory Committee and Outreach Committee.
- Fund and develop stormwater branding campaign for use by the Southeast Watershed Alliance, Seacoast Stormwater Coalition and Save Great Bay groups.
- Build political will to support land use change ordinances by employing social marketing techniques and coordinated networking to municipal boards.
- Build social capital through small community discussions focused on a specific nutrient control issues.

2) Nutrient Criteria

- Assist with communication and facilitation for completion of administrative rulemaking and adoption of numerical estuarine nitrogen criteria.
- Develop education materials about the nutrient criteria.

Outcome(s): Communication strategy implementation.
Budget: $25,000

Year(s): 3-4
Description of activities:
1) Implement Southeat Watershed Alliance and PREP workplans

- Assist in the implementation of the Stormwater Commission's recommendations, including potentially a state-wide stormwater utility district.
- Focus on reducing fertilizer inputs to the watershed with policy changes such as requiring reformulated fertilizers and licensing of "green landscapers".

2) Nutrient Criteria

- Work with communities implement watershed solutions to comply with the criteria.

Outcome(s): Stormwater utility, fertilizer policies
Budget: $30,000

Year(s): 5
Description of activities:

- Complete program changes relative to stormwater utilities and fertilizers.
- Further refinement of nutrient related program changes.
- Research on relationship between sediment and nutrients..

Outcome(s): Creation of new program changes on stormwater ulitities. Report examining impact of nutrient criteria on coastal water quality. .
Budget: $10,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

Nutrient enrichment is an enormously expensive problem that will ultimately cost hundreds of millions of dollars in coastal New Hampshire. The Coastal Program has begun conversations with TNC and Army Corps of Engineers about large scale shellfish restoration projects, with the Piscataqua Region Estuaries Partnership about showcase projects, and with the EPA about a number of funding opportunities. Further funding for non-point source abatement could come from stormwater utilities, Supplemental Environmental Projects and State Revolving Funds. The Coastal Program has also created a joint NGO, state and UNH group called Save Great Bay to begin private fundraising and organizing.

B. Technical Needs:

In general, the DES and/or Coastal Program and its partners have the technical expertise

to address the problem.

VIII. Projects of Special Merit

- Fund Seacoast Stormwater Coalition to conduct fertilizer reduction outreach project in ten municipalities, all of which are in the coastal zone.
- Build political will to support land use change ordinances, starting with low cost solutions like vegetated buffers by developing a video that employs social marketing techniques and coordinating "showings" to municipal boards.
- Fertilizer reduction project to include demonstration lawns in every community.
- Additional buoys for in-situ real-time data gathering to augment the current NERR network.
- Creation of detailed sediment budget for the Great Bay watershed.

5. Coastal 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 Lakes 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

In July 2010, the Obama Administration released its National Ocean Policy and Framework for Marine Spatial Planning. It is the clear intent of the Administration to pursue a marine spatial plan for Federal waters. In addition, the Northeast Regional Ocean Council (NROC) which is currently chaired by New Hampshire, is pursuing the development of a regional state-driven coastal and marine spatial planning exercise. We have had numerous internal discussions about the need and opportunity for such a CMSP exercise in NH. Development of a CMSP has the potential to allow New Hampshire to reduce conflicts between users and increase regulatory efficiency, facilitate the development of emerging industries, and help maintain ecological processes and the services they support (i.e. fishing, tourism and recreation). The NHCP is contemplating an amendment to our approved coastal program similar to the one that is being developed by New York State. This task will help NHCP determine if such a change is prudent. Finally, the primary program changes around CSMP will be to allow for NH to develop a framework to coordinate with the MSP in Federal waters. Our first program change will be to simply create a framework in which our consistency program has a mechanism for interacting with

the Federal MSP effort. Clearly, given the newness of the MSP issue and the Federal Executive Order, the nature of program changes will become clearer over time. The first program changes will likely have something to do with siting activity in state waters or in Federal waters which are deemed, through the CMSP work, to have a direct impact on coastal resources. We would move quickly to develop guidelines or a framework for those activities. In addition, if the regional CMSP identifies specific areas for some use or another (or excludes) some use, then the state would need to examine the possibility of developing enforceable policies around those areas.

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

Over the past few years, off-shore resources and uses have been of increasing concern. In 2007 the state created a tidal energy commission to study the feasibility of tidal power generation, specifically in the Piscataqua River under the Little Bay and General Sullivan Bridges. Aquaculture has increased due to the advent of new technology, especially long-line mussel culture. Conflicts between shellfish harvesting, closure areas and mooring placements are now resulting in intense inter-agency negotiation. And, recently the offshore siting of dredged materials has risen to the forefront because of the closing of the Cape Arundel Disposal cell. The Coastal Program believes that alternative energy development as well as new ocean uses will continue to increase in the immediate future, and it is in the best interest of New Hampshire to build the capacity necessary to address this imminent utilization of ocean resources. This strategy addresses the need for the establishment of a comprehensive approach to the management of ocean resources to balance current uses, support ecosystem health and economic viability, in addition to consideration of future needs. A Coastal Marine Spatial Plan will allow staff to determine where specific ocean uses can be permitted and which uses can be integrated.

IV. Benefit(s) to Coastal Management

This improvement will provide coastal managers and planners with data necessary to address the increasing pressure for the utilization of limited ocean resources. This plan will also provide guidance for future data acquisition and research projects. It could also help to shape Federal consistency determinations for future off-shore activities.

V. Likelihood of Success

Given the national and regional focus on CSMP there is high likelihood of success for this task. The NHCP has already begun the process of data acquisition and problem identification. The NHCP is engaging the Marine Fisheries Division of the New Hampshire Fish and Game Department, the Public Utilities Commission and Port Authority in our conversations. Over the next year, we will begin to engage the commercial fishing organizations and other citizens' groups. Should the NROC regional funding proposals not be successful, we feel that we can still achieve certain successes especially in data development of the sort used by MA in their Ocean Plan, and focus strictly on the coastal zone. The missing link will be fisheries and fine resolution benthic data beyond the coastal zone.

VI. Strategy Work Plan

Total Years: 5
Total Budget: $75,000
Final Outcome(s) and Products:

Year(s): 1-2
Description of activities:

- Mapping and plan creation, starting with extension through NH waters of the datasets used by MA for their Ocean Plan.
- Work with NROC on the regional CMSP, data and stakeholder involvement.
- Interact with Federal agencies on the Federal MSP effort.
- Work on a NH Coastal Use Atlas or similar data product

Outcome(s): Coastal marine spatial plan for NH waters.
Budget: $40,000 (309 funded staff time)

Year(s): 3-4
Description of activities:

- **Identification of use and use restriction areas from the MSP**
- Policy change development.

Outcome(s): Policy changes related to off-shore uses.
Budget: $25,000

Year(s): 5
Description of activities: Implementation activities and assessment.
Outcome(s): Implement policies and identification of program change needs.
Budget: $10,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

Clearly the formula funding through Section 309 will not be adequate to accomplish this task. However, the 309 funding does allow us to spend some staff time on the issue and to work with other regional and state staff to accomplish the tasks. The NHCP is confident, given the data portals being created and data gathering activities in neighboring states and we can get a great start on this tasks at low cost. The fiscal challenge will be in acquiring some of the expensive data sets such as benthic mapping and fine-resolution subsurface geology. The NHCP plans to participate to the greatest extent possible in the efforts of the Northeast Regional Ocean Council as they search out funds for the regional CMSP. The NHCP hopes to leverage any regional funds with judicious use of Section 306 funding.

B. Technical Needs:

Having the technical wherewithal to accomplish this task will be a challenge for our small program. However, there are GIS professionals whose time we can acquire from DES and we

plan to lean heavily on our Federal partners and NERACOOS (which is located in NH). Given the national focus on CMSP, we feel that the Federal agencies are likely to have some resources for technical assistance and knowledge transfer to the states.

VIII. Projects of Special Merit (Optional)

- Seafloor benthic and fine-resolution geology mapping
- Multi-state data sets
- NH Coastal Use Atlas or similar product

6. Development of 309 Assessment and Strategy

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 Lakes 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

This task will create the next 309 Assessment and Strategy.

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

New issues are constantly coming to light as science, policy, and environmental threats change. This task will track the issues that are currently known, develop more information and interest in those issues, and identify additional issues for future strategy updates. This will happen through membership on the Gulf of Maine Council, Northeast Regional Ocean Council, the Corporate Wetlands Restoration Partnership, participation in Piscataqua Regional Estuaries Partnership, policy review working groups, and other committees and organizations, and through attendance at regional meetings and conferences. Participation in these groups will bring to light new issues and priorities for the next 309 Assessment and Strategy.

Based on the latest OCRM guidance, a reassessment of the current 309 Assessment will be undertaken in 2015 to determine the change in status of each enhancement area since the

previous assessment, to re-evaluate priorities, and to identify new issues and program changes. Those needs and enhancement areas identified will form the basis for the proposed projects in the new Strategy. Section 309 Staff will review the Assessment annually to make sure it remains realistic. The five year revision will be comprehensive and will involve public review and comment.

IV. Benefit(s) to Coastal Management

This task will allow 309 staff to remain abreast of numerous state and regional coastal efforts on wetland restoration, river restoration, stormwater management, habitat restoration, invasive species, and water quality. Partnerships and relationships built through this task will also make implementation of other tasks run more smoothly. The result will be a revised 309 Assessment and Strategy.

V. Likelihood of Success

This task has a high likelihood of success based on prior experience. It is through attendance at meetings and councils that issues are raised and partnerships are built. These not only help in identification of issues but also in building the support for proposed program changes. Other state agencies and communities have come to depend on the Coastal program and 309 staff to participate in planning efforts and to provide coordination.

VI. Strategy Work Plan

Total Years: 5
Total Budget: $40,000
Final Outcome(s) and Products:

- Coordination and information transfer.
- Updated Section 309 Strategy and Assessment

Year(s): 4-5
Description of activities:

- Track progress on tasks and strategies, develop annual work plan and revise strategies as necessary.
- Participate in conferences, workshops, Gulf of Maine Council events, etc. to identify issues and needed partners for 309 program changes.
- Reassess current 309 Assessment
- Develop an Assessment document
- Develop new 309 strategies (combined with assessment into one document)
- Make Assessment / Strategy document available for public review
- Finalize Assessment / Strategy document and submit to OCRM for review.

Outcome(s): Updated Section 309 Strategy and Assessment..
Budget: $40,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

NHCP utilized a portion of an employee's time from another part of the Watershed Bureau to create this current assessment. This is a likely and favorable scenario, especially as it brings in a professional person who is not part of the NHCP for an objective assessment.

B. Technical Needs:

The Coastal Program has many of the technical skills to work on this project.

VIII. Projects of Special Merit (Optional)

None

5-Year Budget Summary by Strategy

At the end of the Strategy section, please include the following budget table summarizing your anticipated Section 309 expenses by strategy for each year.

Strategy Title	**Year 1 Funding**	**Year 2 Funding**	**Year 3 Funding**	**Year 4 Funding**	**Year 5 Funding**	**Total Funding**
1. Integrated Land Resource Permitting and Performance Measurement	$15,000	$15,000	$15,000	$15,000	$5,000	**$65,000**
2. Invasive Species	$15,000	$10,000	$15,000	$10,000	$10,000	**$60,000**
3. Adaptation Program Creation and Support	$12,500	$17,500	$15,000	$15,000	$10,000	**$70,000**
4. Implementation of Water Quality Legislation	$12,500	$12,500	$15,000	$15,000	$10,000	**$65,000**
5. Coastal Marine Spatial Planning	$20,000	$20,000	$15,000	$10,000	$10,000	**$75,000**
6. Development of 309 Assessment and Strategy	$0.00	$0.00	$0.00	$10,000	$30,000	**$40,000**
Total Funding	**$75,000**	**$75,000**	**$75,000**	**$75,000**	**$75,000**	**$375,000**

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Appendix A

NH Coastal Adaptation Workgroup

Draft Policy Considerations for Plan Development
June 3, 2010

Potential Municipal Policy Recommendations
New Hampshire coastal communities should consider the following when making policy decisions about municipal infrastructure, land use and natural resource protection:

1. Shoreland "hardening" will not be permitted including new bulkheads, retaining walls or riprap to protect new development; may permit repair/maintenance of existing structures; may permit replacement of existing structures where a non-structural approach is not feasible.

2. Allow for inland migration of freshwater wetlands and salt marshes where topographic conditions are conducive to their successful establishment. These areas should be priorities for voluntary permanent land protection projects. These areas should also be mapped as future flood hazard zones, with reasonable restrictions on incompatible development.

3. New municipal infrastructure shall be sited at land elevations above sea level rise projections for 2100; replacement structures (existing) must be elevated to sea level projections for the life of the facility/structure.

4. Public and private drinking water supplies must be managed to account for salt water intrusion as a result of projected sea level rise.

5. Municipal capital improvement plans shall consider the infrastructure improvement costs associated with projected sea level rise (calibrated for the life of a facility/structure). These considerations are particularly important for transportation corridors, emergency services, stormwater drainage systems, and water/wastewater treatment systems.

6. New roads constructed within areas that will be affected by the projected sea level rise for 2100 shall be privately owned and maintained. *Note: Short of "property takings provisions", this is likely to occur regardless of sound adaption planning by a community. The idea is to limit the community's financial risk by placing this responsibility on the developer and property owner.*

7. Adopt climate change and sea level rise strategies in Master Plans, Hazard Mitigation Plans, Open Space Plans, land use regulations, and other planning documents and natural resource based plans.

8. Land areas that experience catastrophic losses from storm surges and/or sea level rise shall not be rebuilt with public funds, and public funds should not be used to pay for replacement of public infrastructure in these areas.

Potential State Policy Recommendations:

1. Shoreland "hardening" will not be permitted along tidal shorelands or freshwater streambanks including new bulkheads, retaining walls or riprap to protect new development; may permit repair/maintenance of existing structures; may permit replacement of existing structures where a non-structural approach is not feasible. Shoreland hardening permits shall not be issued in any case unless there is an imminent threat to critical public infrastructure (roads, treatment plants, bridges, etc.) or direct loss of an existing primary building structure built in compliance with local, state, and federal land use regulations. DES Wetlands Bureau should develop consistent statutes, rules, and regulations that specifically define permitting regulations pertaining to shoreland hardening prior to dramatic increases in the number of applications for this purpose in response to climate change impacts. Emergency actions/permits shall be managed so as not to enable a loophole allowing for the installation of long-term shoreline hardening structures.
2. Require updated data be used to develop precipitation estimates for the 10, 25, 50, and 100-year storm recurrence events for all road infrastructure and stormwater management system engineering designs, with a margin of safety for the increasing frequency/severity of storm events in New England. These calculations can be incorporated into existing public works projects and permitting programs (for example, Alteration of Terrain permits).
3. Department of Transportation projects must design new or replacement road infrastructure capable of safely handling sea level rise predictions and the increased frequency and severity of extreme freshwater flooding and coastal storm-surge events, as reasonable considering the service life of the infrastructure.
4. DES Subsurface Systems Bureau shall update development permitting standards to consider climate change impacts on the suitability of sewage treatment systems to protect water resources in areas mapped for greater vulnerability to saturated soils from sea level rise, storm surges, freshwater flooding, and increased water table elevations.
5. Establish minimum river flows on major rivers necessary to support aquatic life. Implement river flow management plans that protect minimum instream flows by coordinating withdrawal activities and mandatory water conservation measures. This authority already exists for NH Designated Rivers.
6. Require that climate change impacts are incorporated into local Hazard Mitigation Plans.
7. Require that infrastructure projects applying for State Revolving Funds (SRF) have incorporated (established minimum) climate change considerations into engineering plans in order to be eligible for funding.

Potential Federal Policy Recommendations:

1. Land Areas subject to catastrophic re-occurring natural hazards (e.g. coastal and riverine flooding) shall not be eligible for federal flood insurance, and federal funds shall not be used to rebuild structures in these areas.
2. FEMA should develop flood hazard maps that acknowledge and incorporate sea level rise projections and increases in flood magnitude and recurrence intervals.
3. Federally-funded projects within the New Hampshire coastal zone shall – at a minimum - meet the same climate change adaptation siting and design standards required of state agency and municipal projects.