Coastal Zone Management Act
Section 309 Enhancement Grants Program
Assessment and Strategy
July 2016 – June 2021

May 2015

New Hampshire Department of Environmental Services
Water Division
Watershed Management Bureau
New Hampshire Coastal Program

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Prepared by:
Steve Couture, Coastal Program Manager
Chris Williams, Coastal Program Federal Consistency Coordinator
Kevin Lucey, Coastal Program Restoration Coordinator
Kirsten Howard, NOAA Coastal Management Fellow
Tracie Sales, NHDES Watershed Planner

New Hampshire Department of Environmental Services
222 International Drive, Suite 175
Portsmouth, New Hampshire 03801
(603) 559-1500
www.des.nh.gov

Thomas S. Burack, Commissioner
Keith DuBois, Acting Assistant Commissioner
Eugene J. Forbes, P.E., Water Division Director

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List of Abbreviations

CAW – New Hampshire Coastal Adaptation Workgroup
CMP – Coastal Management Program
CZM – Coastal Zone Management
CZMA – Coastal Zone Management Act
GBNERR – Great Bay National Estuarine Research Reserve
FEMA – Federal Emergency Management Agency
NHCP – New Hampshire Coastal Program
NHDES – New Hampshire Department of Environmental Services
NOAA – National Oceanic and Atmospheric Administration
NPS – Nonpoint Source
NROC – Northeast Regional Ocean Council
PREP – Piscataqua Region Estuaries Partnership
SAMP – Special Area Management Plan
UNH – University of New Hampshire

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INTRODUCTION

The Coastal Zone Enhancement Program was established under Section 309 of the Coastal Zone Management Act (CZMA), as amended. The program encourages state coastal management programs (CMPs) to strengthen and improve their federally approved coastal management programs in one or more of nine enhancement areas: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans (SAMPs), ocean/Great Lakes resources, energy and government facility siting, and aquaculture.

Every five years, states and territories are encouraged to conduct self-assessments of their CMPs to determine the extent to which problems and opportunities exist to enhance their programs within each of the nine enhancement areas and assess the effectiveness of existing management efforts to address identified problems.

Past Section 309 Assessments

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 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. For example, the 309 Plan was used to support the establishment of the salt marsh restoration program.

The Strategy was revised in 1994, 1996, 2001, 2006 and 2011. The table below summarizes the high priority areas identified in each NHCP assessment, which have included Cumulative and Secondary Impacts of Development as well as Wetland Protection and Restoration throughout the history of the New Hampshire coastal program.

High Priority Coastal Issues in New Hampshire							
Enhancement Areas	**1991**	**1994**	**1996**	**2001**	**2006**	**2011**	**2016**
Wetlands	✓	✓	✓	✓	✓	✓	✓
Coastal Hazards						✓	✓
Public Access							
Marine Debris							
Cumulative & Secondary Impacts	✓	✓	✓	✓	✓	✓	✓
Special Area Management Planning							
Ocean & Great Lakes Resources					✓	✓	
Energy & Government Facility Siting							
Aquaculture							

2016 Section 309 Assessment

The priority issues and strategies for this Assessment were determined through a comprehensive planning process undertaken by NHCP staff during the summer and fall of 2014. Stakeholders and partners were involved in this process through personal interviews and facilitated input sessions. The facilitated sessions included confirmation of enhancement area prioritization developed by NHCP staff as well as targeted discussions on coastal hazards, wetlands, and cumulative and secondary impacts. The sessions provided NHCP staff with additional management needs, gaps, and emerging issues at the community, state and regional level. The enhancement area prioritization was supported by members of the New Hampshire Coastal Adaptation Workgroup (CAW), the Management Committee of the Piscataqua Region Estuaries Partnership (PREP), the New Hampshire Department of Environmental Services (NHDES) Watershed Assistance Section, and the NHDES Wetlands Bureau. Additional support for priorities and strategies for this Assessment came through the PREP 2010 Comprehensive Conservation and Management Plan (PREP, 2010) as well as the 2014 NHDES New Hampshire Nonpoint Source Management Program Plan (NHDES, 2014). Because both of these management plans also contain prioritized goals and objectives based on input from stakeholders, they, too, provide public guidance on Section 309 activities.

Upon completion of the draft 2016 Section 309 Assessment and Strategy in February 2015, the report was subjected to a 30-day public comment period. Partners and stakeholders, including numerous agencies and organizations, were invited to comment. No comments were received during the public comment period.

SUMMARY OF RECENT SECTION 309 ACHIEVEMENTS

Wetlands

Program change: Changes to pesticides regulations regarding invasive species
The NHCP staff-supported Coastal Watershed Invasive Plant Partnership Steering Committee (CWIPP) was formally organized in 2008. With the signing of an official agreement, 11 state and federal agencies and nonprofit conservation groups formed a strong alliance to stop the spread of invasive plants in New Hampshire's coastal watershed. The creation of CWIPP was first proposed in the 309 Enhancement Grants Program Assessment and Strategy in 2006 and was further expanded upon in the 2011 309 Assessment and Strategy. NHCP served as CWIPP chairperson for 8 years until the partnership dissolved in 2013 due to lack of chairperson successor.

CWIP partnership significantly increased the capacity for invasive control in the coastal watershed, which resulted in several program changes in the form of regulatory changes and process improvements. CWIPP partners provided critical support and comments to a variety of rule changes at the Division of Pesticide Control that resulted in major benefits to regional invasive plant control. NHCP's Restoration Coordinator attended hearings and provided testimony to the Division of Pesticide Control about the benefit of the proposed rule changes. These changes are summarized below.

<u>"Label is the Law" rule modified</u>
The rule change allows practitioners to apply herbicide at rates less than specified on the label (unless expressly prohibited by the label). The change also means that an herbicide can be used against a target pest that is not specified on the label as long as the use conforms with the site specified on the label, unless otherwise prohibited.

Previous to this rule change, there were specific invasive species, such as Oriental bittersweet, that were not listed on any label; thereby preventing the effective control of these invasive plants. This rule change allows practitioners to use an herbicide based on the approved habitat rather than the specific plant. This rule change allowed the NHCP and its partners to finally begin control on the significant populations of bittersweet at Odiorne Point State Park. Oriental bittersweet had come to dominate the vegetation communities throughout the 320 acre park since it was first planted by the Department of Army to camouflage bunkers during the 1940s.

<u>Brown-Out rule lifted for invasive plants</u>
The previous rule regarding 'brown out' along rights-of-way stated, in part, that no herbicide shall be applied to brush along New Hampshire public road rights-of-way of more than one year's growth or during the period of green foliage for deciduous trees with the exception of where the brush was cut down and removed. The largest consequence of this outdated rule was to essentially prohibit the effective control of invasive Japanese knotweed along state highways, which, in some instances, had created dense monocultures on roadsides and highway medians. In some circumstances, such as along Route 1A in Rye, the uncontrolled knotweed encroached into the roadway and obscured lines of sight. In all instances, these uncontrolled roadside knotweed sites served as sources of seed and plant material to establish other knotweed sites, eventually getting into river corridors, which are much more difficult to control due to the sensitivity of aquatic resources.

Waiting time for permits eliminated

To aid early detection rapid response work on invasive species, a rule change enacted by the Division of Pesticide Control in 2011 eliminates the lead time requirements for special permits for invasive plant projects. Invasive plant projects have also been exempted from notification requirements for spraying in the right-of-way. The Seacoast has benefited from this rule change through the NHCP's efforts to prevent perennial pepperweed from becoming established in coastal New Hampshire. There have been two instances where new populations of pepperweed were controlled with herbicide in the same year that they were identified, which would have been impossible prior to the rule change.

Statewide contract for services for control of invasive species

In 2011, the New Hampshire Department of Transportation and the New Hampshire Department of Administrative Services created a statewide contract for services for the control of invasive species on state lands and rights-of-way. This contractual mechanism allows state agencies to more effectively contract invasive plant control to a pre-qualified contractor at a pre-determined cost per acre. State agency partners of CWIPP, including the NHCP, provided valuable input on the statewide contract during its initial drafting. As a result of this change and the brown-out rule change described above, New Hampshire state agencies have made significant progress in controlling roadside populations of Japanese knotweed and common reed, which is evident on Interstate 95, Highway 101, and many other smaller state highways throughout the coastal zone.

Statewide limit on nutrient levels in fertilizers

Effective January 2014, the New Hampshire legislature placed limits on the level of nitrogen and phosphorus in lawn fertilizers that can be sold in retail stores. The purpose of these limits is to reduce nutrient pollution from nonpoint sources to Great Bay and New Hampshire's lakes and ponds. These changes to RSA 431 were supported by NHDES and NHCP and are expected to lower nitrogen levels in Great Bay by reducing nutrient runoff.

Coastal Hazards

Coastal Adaptation Workgroup (CAW)

CAW was established in 2010, and NHCP's ongoing participation supports the Adaptation Program Creation and Support strategy identified in the *2011 Section 309 Assessment and Strategy Report*.[1] NHCP joins the NHDES Air Resources Divisions Permitting and Environmental Health Bureau, the Coastal Training Program at the Great Bay National Estuarine Research Reserve (GBNERR), New Hampshire Sea Grant, the Natural Resources Outreach Coalition, two regional planning commissions, and a multitude of other organizations and expertise in participating in CAW.

CAW helps communities in New Hampshire's Seacoast area prepare for the effects of extreme weather events and other effects of long term climate change by providing education, facilitation, technical assistance and guidance. CAW members coordinate on projects that move forward climate adaptation planning.

NHCP staff have been active members of CAW throughout the last five years. In recent years, NHCP staff have participated in approximately two meeting per month to support CAW's ongoing activities including: planning and publicizing the "Water, Weather, Climate, and Community" workshop series; helping plan the annual New Hampshire Coastal Climate Summit and other conferences, including New Hampshire's first

[1] http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-25.pdf.

Shoreline Management Conference in late 2014. In addition, NHCP staff coordinated the development of the CAW website, leveraging existing web resources provided by the national StormSmart Coasts network. Numerous activities and projects have resulted from NHCP's work with CAW. Highlights of specific projects include:

- The "Water, Weather, Climate, and Community" ongoing workshop series, hosted by CAW, aids communities in becoming more comfortable with discussing, developing, and implementing adaptation and hazard mitigation strategies. There have been eight workshops to date. NHCP staff assists with planning and publicity, including designing the workshop flyers, as well as workshop facilitation. All workshop materials and PowerPoint presentations are available on the New Hampshire StormSmart Coasts website at http://nhblog.stormsmart.org/past-workshops/.
- The New Hampshire Coastal Climate Summit is an annual event hosted by CAW member GBNERR and coordinated through CAW that brings together the community to learn about projects and research related to climate change and adaptation. The third annual summit in spring 2014, at which NHCP staff presented, brought together approximately 100 people sharing stories and lessons learned from coastal communities outside of New Hampshire. NHCP staff also helped publicize the 2014 Summit, assisting with flyer design and dissemination.
- NHCP led the development of and wrote the proposal for the Taking Action for Resilient Natural and Built Communities in New Hampshire through Applied Modeling and Development of a User-Driven Toolbox Project of Special Merit. This project was developed and coordinated through CAW. This was one of the only projects to receive full funding under the Coast Zone Management Act Projects of Special Merit Competition - FY2013. NHCP is the project lead and the chair of the project's steering committee. As part of this Project of Special Merit, NHCP staff assisted with facilitation during the "Preparing for Climate Change" community workshops as well as providing input on design and data acquisition for the Coastal Hazards Data Viewer.
- NHCP staff connected the National Weather Service with CAW to conduct a storm surge focus group that helped inform a National Weather Service product on storm surge.
- A subgroup of the CAW, coordinated by NHCP staff and including a NHCP staff person, reviewed the structure and organization of the New Hampshire StormSmart Coasts website and helped transition it to a new format. The group developed a plan of short-, mid- and long-term improvements that will be implemented on the website. In addition to regular postings about events and other news items, the CAW subgroup contributed several in-depth articles to the CAW blog highlighting community and state agency progress toward adapting to effects of climate change. The CAW subgroup staff also created the CAW Twitter feed, regularly used to promote events and important science and news articles.
- CAW partner organizations, with NHCP funding and staff assistance, facilitated a project with the town of Rye to help community members begin planning for climate change impacts.
- The New Hampshire Shoreline Management Conference, hosted by the GBNERR and CAW, was an initiative that started a collaborative dialogue about shoreline management issues, including sea level rise, in New Hampshire and identify best practices in other parts of the country. NHCP provided funding support and one NHCP staff served on the conference planning team, assisting with agenda development, interactive exercise design including maps, and publicity. NHCP staff presented and facilitated during the conference in addition to participating in a follow-up planning meeting to draft a work plan for future research and outreach needs on the topic.
- The New Hampshire King Tide Photo Competition took place during the October 2014 King Tide. In partnership with the Gulf of Maine Council, CAW designed a photo competition for communities to document coastal hazards and vulnerabilities that will be exacerbated with sea level rise. NHCP

staff helped plan and publicize the event, obtained prizes from local businesses, and managed the photo judging process.

Program change: New state legislation

NHCP staff helped develop two new pieces of legislation that have been passed since the last 309 Assessment was done: 1) the Coastal Risks and Hazards Commission and 2) coastal management provisions in master plans.

1) In 2013, the New Hampshire legislature enacted RSA 483-E establishing the New Hampshire Coastal Risks and Hazards Commission. "The commission shall recommend legislation, rules, and other actions to prepare for projected sea level rise and other coastal and coastal watershed hazards such as storms, increased river flooding, and storm water runoff, and the risks such hazards pose to municipalities and state assets in New Hampshire." (RSA 483-E:3 I) The commission reports to the legislature annually. This change was driven by CAW and supported by NHCP as one outcome of the Adaptation Program Creation and Support strategy identified in the *2011 Section 309 Assessment and Strategy Report*.[1] NHCP expects that this legislation will result in better planning for projected sea level rise and other coastal hazards.

2) Also in 2013, the New Hampshire legislature approved an addition to local planning and zoning regulations that authorizes coastal management provisions in master plans in order to address planning needs and property loss resulting from projected coastal risks due to increased frequency of storm surge, flooding, and inundation. This CAW-driven, NHCP-supported change promotes climate change planning in coastal communities and was the result of a 309 strategy identified in the 2011 Section 309 Assessment and Strategy Report.[1] The town of Rye recently added climate change considerations to its master plan, based on this enabling legislation.

Project of Special Merit Grant: Taking Action for Resilient Natural and Built Communities in New Hampshire through Applied Modeling and Development of a User-Driven Toolbox

The Taking Action for Resilient Natural and Built Communities in New Hampshire is a NHCP-driven NOAA Project of Special Merit that received full funding in the CZMA Projects of Special Merit Competition - FY2013. This ongoing project includes both modeling and mapping products. The project's coordinated approach enables project partners to learn how communities want to use and access coastal data and GIS tools in hazards and climate adaptation planning as well as to identify the steps that can be taken to ensure that climate related science is relevant to local needs.

Through this Project of Special Merit, NHCP and project partners are connecting Seacoast municipal leaders, community members and business owners with information and tools to help plan for coastal hazards. This work advances resiliency and adaptation planning for climate change related hazards in coastal habitats in New Hampshire's 17 coastal zone communities and 42 coastal watershed communities by integrating tools, research, outreach and technical assistance.

Some highlights of the project include: The Sea Level Affecting Marsh Migration (SLAMM) model which uses new, more precise data to provide updated information on how salt marshes will be able to adapt to future sea level rise conditions; the incorporation of data such as the 13 newly verified Sediment Elevation Tables for tidal marsh elevation into the SLAMM; the New Hampshire Coastal Hazards Viewer (available in the spring of 2015) where data and maps can be used by coastal watershed communities for hazard mitigation planning; the efforts of three New Hampshire communities to reduce vulnerability to coastal hazards and raise awareness about coastal vulnerability; and outreach to area businesses.

Coastal Resilience Specialist Position
In 2015, the NHCP hired a full-time Coastal Resilience Specialist to develop and implement a coastal resilience program. The Coastal Resilience Specialist provides technical assistance, outreach materials and training to communities and state agencies, serves as the point person for coastal resilience grant projects administered by NHCP, participates in CAW, supports the New Hampshire Coastal Risks and Hazards Commission, and will be assisting with coastal hazard vulnerability assessments for 10 communities.

Cumulative and Secondary Impacts

Program change: Model stormwater standards for coastal watershed communities
The *Model Stormwater Standards for Coastal Watershed Communities*, published in December 2012 (UNH and RPC, 2012), was compiled by the Southeast Watershed Alliance, funded by NHCP, and developed with assistance of the University of New Hampshire (UNH) Stormwater Center and the Rockingham Planning Commission (RPC). This model offers minimum, consistent, and enforceable stormwater management standards for coastal watershed communities.

The standards encourage the use of Low Impact Development strategies, build upon innovative stormwater standards recently adopted by several coastal watershed communities, and are consistent with EPA Region 1 and NHDES guidelines. Adoption of the model stormwater standards can provide consistent water quality protection throughout New Hampshire's coastal watershed. These model standards are under consideration by several New Hampshire communities and have been adopted by the Town of Newfields.

Project of Special Merit: Soak Up the Rain Great Bay
NHCP has recently been awarded funding in the CZMA Projects of Special Merit Competition - FY2014 for the Soak Up the Rain Great Bay project. Soak up the Rain (SOAK) Great Bay is a stormwater outreach and assistance program designed to increase awareness of stormwater runoff, the problems it can cause, and the simple ways it can be better managed to reduce water pollution and adapt to our changing climate. Through work with the Great Bay Stewards, the UNH Cooperative Extension, and coastal volunteer groups, SOAK Great Bay empowers individuals and provides them with the resources to contribute to protecting and restoring clean water.

SOAK Great Bay and partners will encourage residential and lot-scale stormwater management, coordinate messaging about stormwater, and provide a way for communities, residents, and environmental professionals to communicate about stormwater, nonpoint source pollution, and other coastal water quality issues. Implementation of SOAK Great Bay will help to raise the awareness and the acceptance of the shared responsibility for clean water and the ease and abundance of voluntary opportunities to reduce nonpoint source (NPS) pollution at the lot scale.

Over an 18 month period beginning in November 2014, partners will develop a local program sustainability plan to identify program successes, barriers, and strategies for managing the program over the long term. The completed sustainability plan will provide a road map for the SOAK Great Bay program as well as for other coastal zone communities interested in pursuing similar programs. The project will also develop a landscaper training program for professional landscapers to install stormwater management practices suitable for small sites and to consider site drainage when designing and performing landscaping services.

This project will help build community resilience to climate change related impacts, such as storm frequency, intensity, and flooding by promoting infiltration of stormwater on residential properties to

reduce risk. This project also works toward building political will to support land use ordinances related to water quality protection and instilling the concept that stormwater management is simply a component of everyday property management.

Ocean Resources

Program Change: Committee to Study Offshore Wind Energy and the Development of Other Ocean Power Technology

In 2014, the Committee to Study Offshore Wind Energy and the Development of Other Ocean Power Technology determined that while wave and tidal energy generation would not produce significant energy, offshore wind energy generation is feasible. The Committee recommended that the turbines be placed three or more miles off the shore of the Isle of Shoals, be built on floating platforms attached to the sea floor, and that New Hampshire work cooperatively with Maine and Massachusetts in the development of offshore wind energy.

Project of Special Merit: Marine Habitat Characterization and Classification in the Northeast

In 2012, NHCP submitted a proposal and secured funding for a regional Project of Special Merit titled *Marine Habitat Characterization and Classification in the Northeast*. Through this project, the five Coastal Programs of New England – Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut – collaborated through the Northeast Regional Ocean Council (NROC), which NHCP chaired at the time, on a project to improve regional marine habitat characterization and classification. The project built directly off existing regional- and state-level activities that focused on foundational components of marine habitat protection such as identification of habitats through mapping and classification efforts.

Over the course of a year and half, the Habitat Classification Working Group (Working Group) – comprised of practitioners and managers from each of the five Coastal Programs, other state and federal agencies, and academics – discussed the multitude of methodologies and activities transpiring in the Northeast regarding habitat classification. This allowed participants a unique opportunity to develop new partnerships and raise awareness of not just the importance of their work, but of similar projects where collaboration between two or more parties would greatly benefit northeast habitat classification efforts in general.

The Working Group's efforts culminated in a 2013 workshop in which a set of regional goals were agreed upon by Working Group members and other experts in the fields of Habitat Classification and Ocean Mapping. NROC has subsequently established a Habitat Classification and Ocean Mapping Subcommittee under its Ocean and Ecosystem Health Committee to advance the goals identified at the workshop. This will enable NROC to continue the exceptional work accomplished under the regional Project of Special Merit and shape the way the New England States discuss and practice habitat classification and ocean mapping far into the future. The NROC Ocean and Ecosystem Health Committee's 2014-2015 work plan, which discusses the habitat classification efforts, is expected be available on their website http://northeastoceancouncil.org in the near future.

New Hampshire estuary spatial planning project: Coordinating data to assess our ecosystem services (In progress, due September 2015)

The New Hampshire Estuary Spatial Planning Project (NHESP) is a two-year, NOAA Coastal Management Fellowship project to coordinate the collection, integration, and accessibility of existing spatial data for New Hampshire's Hampton-Seabrook and Great Bay estuaries and to assess ecosystem services within the Great Bay estuary. The overall goal is to help improve management decisions. Cash match in the amount of $7,500 each by The Nature Conservancy and PREP is helping make this project possible.

The first phase (September 2013 to August 2014) of NHESP coordinated existing spatial datasets to address well-defined management questions and improve public access to this important information. The primary venue for this data is the Coastal Viewer, which is being created with funding from the ongoing Project of Special Merit *Taking Action for Resilient Natural and Built Communities in New Hampshire.* By integrating these datasets in a single public location, New Hampshire's coastal managers and other interested stakeholders are able to make better informed decisions. Phase I resulted in an extensive inventory of spatial datasets as well as a New Hampshire Spatial Data Management Plan that identifies local data stewards and data gaps and makes recommendations to improve spatial data coordination in the future.

During the second phase (March 2014 to September 2015), the project team is working on a tradeoff analysis of key ecosystem services provided by eelgrass, oyster beds, and salt marshes to understand the value of restoration and other activities in the Great Bay estuary. This analysis is using existing New Hampshire spatial datasets as well as models from InVEST (Integrated Valuation of Environmental Services and Tradeoffs - a suite of software models used to map and value the goods and services from nature that sustain and fulfill human life).[2] An advisory committee of more than 20 partner organizations is providing technical assistance and expertise for this ecosystem services assessment, and experts and other stakeholders are helping to develop scenarios that depict future management options. In addition to an assessment of current ecosystem services, the future scenarios will be assessed to compare the levels of ecosystem services expected for the future. The analysis will be shared through maps and other final outreach materials.

Northeast Regional Planning Body

The goal of ocean planning is to protect coastal and ocean resources, reduce potential user conflicts, and facilitate compatible uses. NHDES is involved with an ongoing regional ocean planning initiative to work with stakeholder groups, including federal and state agencies, tribes, environmental organizations, industry representatives and the public to identify opportunities to improve coordination and use of New England's regional ocean information.

New Hampshire's participation in regional ocean planning occurs through two federal and multi-state partnerships: the NROC, formed in 2005 by the Governors of the New England states, and the Northeast Regional Planning Body (NRPB), which is one of nine planning bodies established by a Presidential Executive Order in 2010 under the National Ocean Policy. New Hampshire is represented on NROC by the NHDES Coastal Program and on the NRPB by NHDES Commissioner Tom Burack and New Hampshire Fish and Game Department Executive Director Glenn Normandeau. Neither the NRPB nor NROC have regulatory authority.

The NRPB is charged with leading a cooperative effort to develop a regional ocean plan, which is expected to be released in final form in early 2016. With input from NROC and many ocean stakeholders, the NRPB has developed two documents which set forth the fundamental elements of its ocean planning activities: *RBP's Goals and Objectives* (NRPB, n.d.) and *The Framework for Ocean Planning in the Northeastern United States* (NRPB, 2014).

The November 2014 NRPB meeting took place in New Castle, marking the first time the NRPB met in New Hampshire.

[2] http://www.naturalcapitalproject.org/InVEST.html.

PHASE I (High-level) ASSESSMENTS

Wetlands

Section 309 Enhancement Objective: Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

Note: For the purposes of the Wetlands Assessment, wetlands are "those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." [33 CFR 328.3(b)]. See also pg. 17 of the CZMA Performance Measurement Guidance[3] for a more in-depth discussion of what should be considered a wetland.

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Using provided reports from NOAA's Land Cover Atlas[4] or high-resolution C-CAP data (Pacific and Caribbean Islands only), please indicate the extent, status, and trends of wetlands in the state's coastal counties. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico and the Commonwealth of the Northern Mariana Islands (CNMI) currently only have data for one time point so will not be able to report trend data. Instead, Puerto Rico and CNMI should just report current land use cover for all wetlands and each wetlands type.

Coastal Wetlands Status and Trends		
Current state of wetlands in 2011 (acres)		
Percent net change in total wetlands (% gained or lost)	from 1996-2011	from 2006-2011
	-0.9% (-923.2 acres)	-0.2% (-220.0 acres)
Percent net change in freshwater (palustrine wetlands) (% gained or lost)	from 1996-2011	from 2006-2011
	-0.8% (-785.1 acres)	-0.2% (-206.6 acres)
Percent net change in saltwater (estuarine) wetlands (% gained or lost)	from 1996-2011	from 2006-2011
	-0.1% (-98.1 acres)	-0.02% (-20.5 acres)

[3] http://coastalmanagement.noaa.gov/backmatter/media/czmapmsguide11.pdf.
[4] http://www.csc.noaa.gov/ccapatlas/. Summary reports compiling each state's coastal county data are provided on the ftp site.

How Wetlands Are Changing		
Land Cover Type	**Area of Wetlands Transformed to Another Type of Land Cover between 1996-2011 (Sq. Miles)**	**Area of Wetlands Transformed to Another Type of Land Cover between 2006-2011 (Sq. Miles)**
Development	1.14	0.36
Agriculture	0.041	0.04
Barren Land	0.14	0.006
Water	0.20	0.012

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of coastal wetlands since the last assessment to augment the national data sets.

   - *PREP's State of Our Estuaries Report* (PREP, 2013) – This report, published by PREP, "examines environmental indicators of estuarine health, such as bacteria levels, nutrient concentrations, toxic contaminant levels, abundance of shellfish, and land use in the coastal watershed. By examining long-term data sets compiled from a variety of organizations, the report describes the current status of Southeastern New Hampshire and Southern Maine's estuaries and suggests trends for the future. The report is designed to provide readers with an accurate understanding of environmental trends for the Great Bay and Hampton-Seabrook estuaries so that they may make informed land use and resource management decisions." The report indicates that 280.5 acres of salt marsh in the Piscataqua coastal zone have been restored since 2000, and 30.6 acres of salt marsh have been enhanced since 2009, which is moderate progress toward the PREP's goals of 300 acres each of restored and enhanced salt marsh.
   - *Piscataqua Region Environmental Planning Assessment 2015* (PREPA, PREP 2015) – The 2015 PREPA, described more fully in "Phase I – Cumulative and Secondary Impacts, Resource Characterization Question 5,"notes that region-wide action is needed to increase and manage buffers and setbacks along waterbodies. The 2015 report is consistent with the original report published in 2010 (Sowers, 2010) which indicated a lack of consistency in shoreland and wetland buffers as well as structure setback requirements from shoreland within the 42 coastal communities.
   - In fall of 2014, the US Fish and Wildlife Service (USFWS) published a revised set of National Wetland Inventory (NWI) maps for New Hampshire's Seacoast Region.[5] This data set had not been updated since 1985. The previous NWI data had become out-of-date and was not often relied upon. The 2014 NWI map update includes the 17 New Hampshire coastal communities.

Management Characterization:

1. Indicate if there have been any significant changes at the state or territory level (positive or negative) that could impact the future protection, restoration, enhancement, or creation of coastal wetlands since the last assessment.

[5] http://www.fws.gov/wetlands/Data/Data-Download.html

Management Category	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

    The NHDES adopted new rules regarding culvert certification effective December 21, 2013. The new rules allow certified New Hampshire state and municipal public works employees to complete culvert maintenance and replacement work on culverts up to 48 inches diameter without applying for a routine roadway maintenance permit. Certified culvert maintainers must attend a training course, follow New Hampshire Department of Transportation's *Best Management Practices for Routine Roadway Maintenance Activities in New Hampshire* (New Hampshire Department of Transportation, 2001) guidelines, and are limited to working in areas that do not include sensitive areas such as prime wetlands, tidal wetlands and undisturbed tidal buffer zones. Allowed work is limited to sites not requiring major culvert extensions or realignments and where culverts have not been overtopped in the past. These changes allow for faster, more efficient culvert maintenance, which is expected to improve passage of stormwater and reduce infrastructure destruction during storm events. While this change was not 309- or CZM-driven, it was supported by NHCP.

    Although not deemed a significant change, New Hampshire wetlands statute RSA 482-A was amended by the legislature in 2012, resulting in reduced protections for some prime wetlands in New Hampshire. The statute change also required modifications to wetlands rule Env-Wt 700, which outlines the requirements for municipalities that wish to designate wetlands of significant value that are worthy of extra protection because of their uniqueness, fragility, or unspoiled character. The changes to RSA 482-A and Env-Wt 700 eliminate the 100 foot buffer surrounding prime wetlands for municipalities that designated prime wetlands prior to 2006, though protections to the 100 foot buffer adjacent to prime wetlands within communities that designated prime wetlands after 2006 remain unchanged. Coastal Zone communities with designated Prime Wetlands include: Exeter, Hampton, Hampton Falls, Newington, Newmarket and Portsmouth. This change was not driven by 309 or CZM and may result in negative direct impacts to upland buffers and negative indirect impacts to the prime wetlands themselves. Protection against direct impacts on prime wetlands remains unchanged.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

    High __X__
    Medium _____
    Low _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   Given the importance of wetlands to help mitigate flooding and erosion risks, their susceptibility to degradation resulting from development, their role as critical habitat for fish and wildlife, and the need for policies and programs to foster future wetland protection improvements, this enhancement area is rated as a High priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP. PREP and CAW include representatives from the UNH Institute for Earth, Oceans and Space; New Hampshire Fish and Game Department (NHF&G)-Great Bay National Estuarine Research Reserve; New Hampshire Sea Grant; UNH-Jackson Estuarine Laboratory; Rockingham Planning Commission; Strafford Planning Commission; UNH-NH GRANIT; City of Portsmouth; USEPA; Lamprey River Advisory Committee; NHF&G-Marine Fisheries Division; Conservation Law Foundation; The Nature Conservancy; and Great Bay Trout Unlimited.

Coastal Hazards

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. §309(a)(2)

Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. **Flooding:** Using data from *NOAA's State of the Coast* "Population in the Floodplain" viewer[6] and summarized by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,[7] indicate how many people were located within the state's coastal floodplain as of 2010 and how that has changed since 2000. You may to use other information or graphs or other visuals to help illustrate.

[6] http://stateofthecoast.noaa.gov/pop100yr/welcome.html. Note FEMA is in the process of updating the floodplain data. This viewer reflects floodplains as of 2010. Summary population data for each coastal state is available on the ftp site.
[7] www.csc.noaa.gov/digitalcoast/tools/snapshots.

Population in the Coastal Floodplain			
	2000	**2010**	**Percent Change from 2000-2010**
No. of people in coastal floodplain[6]	42,325	44,647	5.5%
No. of people in coastal counties[8]	389,592	418,021	7.3%
Percentage of people in coastal counties in coastal floodplain	10.8%	10.7%	----------

2. **Shoreline Erosion** (for all states other than Great Lakes and islands; for Great Lakes and islands, see Question 5): Using data from *NOAA's State of the Coast* "Coastal Vulnerability Index,"[9] indicate the vulnerability of the state's shoreline to erosion. You may use other information or graphs or other visuals to help illustrate or replace the table entirely if better data is available. *Note: For New York and Pennsylvania that have both Atlantic and Great Lakes shorelines, fill out the table below for the Atlantic shoreline only.*

Vulnerability to Shoreline Erosion		
Vulnerability Ranking	**Miles of Shoreline Vulnerable[9]**	**Percent of Coastline**
Very low (>2.0m/yr) accretion	0	0
Low (1.0-2.0 m/yr) accretion)	0	0
Moderate (-1.0 to 1.0 m/yr) stable	49	100
High (-1.1 to -2.0 m/yr) erosion	0	0
Very high (<-2.0 m/yr) erosion	0	0

3. **Sea Level Rise** (for all states other than Great Lakes and islands; for Great Lakes and islands, see Question 5): Using data from *NOAA's State of the Coast* "Coastal Vulnerability Index,"[10] indicate the vulnerability of the state's shoreline to sea level rise. You may provide other information or use graphs or other visuals to help illustrate or replace table entirely if better data is available. *Note: For New York and Pennsylvania that have both Atlantic and Great Lakes shorelines, fill out the table below for your Atlantic shoreline only.*

Coastal Vulnerability to Historic Sea Level Rise		
Vulnerability Ranking	**Miles of Shoreline Vulnerable[10]**	**Percent of Coastline**
Very low	49	100
Low	0	0
Moderate	0	0
High	0	0
Very high	0	0

4. **Other Coastal Hazards:** In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The state's multi-hazard mitigation plan is a good additional resource to support these responses.

[8] http://www.csc.noaa.gov/digitalcoast/data/stics.
[9] "Erosion rate" http://stateofthecoast.noaa.gov/vulnerability/welcome.html.
[10] "Historic sea-level rise" http://stateofthecoast.noaa.gov/vulnerability/welcome.html.

Type of Hazard	General Level of Risk[11] (H, M, L)
Flooding (riverine, stormwater)	High
Coastal storms (including storm surge)[12]	High
Geological hazards (e.g., tsunamis, earthquakes)	Moderate
Shoreline erosion[9]	Moderate
Sea level rise[10]	Moderate
Great Lake level change	N/A
Land subsidence	Low
Saltwater intrusion	Not assessed
Other (please specify): Fluvial erosion	High

5. If available, briefly list and summarize the results of any additional data or reports on the level of risk and vulnerability to coastal hazards within your state since the last assessment. The state's multi-hazard mitigation plan or climate change risk assessment or plan may be a good resource to help respond to this question.

Scientific Reports

- *Climate Change in the Piscataqua/Great Bay Region: Past, Present, and Future* (Wake et al., 2011) - This report outlines historical climate trends and future climate change projections for the Piscataqua/Great Bay Region in coastal New Hampshire. Historical and future sea level rise, temperature, and precipitation information helped the state, and in particular the coastal zone, better understand risk and vulnerability. The report was released with a series of maps that show flood risk with future sea level rise and storm surge conditions, giving an improved understanding of the spatial vulnerability to these hazards along the New Hampshire coast.
- *Climate Change in Southern New Hampshire: Past, Present, and Future* (Wake et al., 2014) - This report presented similar information to the Piscataqua/Great Bay report described above, but used more current climate change science and local data.
- *Sea-level Rise, Storm Surges, and Extreme Precipitation in Coastal New Hampshire: Analysis of Past and Projected Future Trends* (Kirshen, 2014) - The Science and Technical Advisory Panel for the New Hampshire Coastal Risk and Hazard Commission recommended that the state plan for a range of 1.3 to 2.0 feet of sea level rise by 2050 and 3.9 to 6.6 feet of sea level rise by 2100. The panel's report also predicts more intense coastal storms and resulting flooding. At the time of this 309 Assessment, this report is the most current information focused on these hazards in New Hampshire.

Vulnerability Assessments and Plans

- *State of New Hampshire Multi-Hazard Mitigation Plan* (New Hampshire Department of Safety, 2013) – This report, released by the New Hampshire Department of Safety, Homeland Security, and Emergency Management, identifies updated risk scores for several hazards that are pertinent to coastal management including coastal and riverine flooding, hurricanes, dam failure, earthquakes, and severe weather. The 2013 plan defines riverine flooding and coastal flooding as *high risk* hazards and dam failure, earthquakes, hurricanes/tropical cyclones, and

[11] 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.*

[12] http://nca2014.globalchange.gov/.

tornado/downbursts as *moderate risk* hazards. The plan also highlights the need to investigate New Hampshire's risk of saltwater intrusion in the next iteration of the plan.

- *Coastal New Hampshire Floodplain Mapping Project* (New Hampshire Office of Energy and Planning, 2014) - The New Hampshire Office of Energy and Planning, together with Federal Emergency Management Agency (FEMA) and other project partners, carried out a coastal mapping project to update the FEMA flood insurance rate maps for coastal New Hampshire. The maps will be preliminary until mid-2015. They identify new coastal areas of high flood risk as well as areas that are at lower risk than previous maps show. Higher resolution topographic data was used as well as new methods to better calculate flood risk from wave action. Some non-regulatory mapping products were released, including maps that show the changes between the preliminary updated Flood Insurance Rate Maps (FIRMs) and the current effective FIRMs. Sea level rise scenario maps will be released in 2015 as part of this project.
- *PREP's State of Our Estuaries Report* (PREP, 2013) – See "Phase I - Wetlands, Resource Characterization Question 2" response above for a summary of this report. The report summarizes indicators, status and trends associated with estuarine ecosystem risk, and highlights deteriorating negative trends that relate to coastal hazards including increases in impervious surfaces, declining coastal habitats that provide shoreline stabilization and other benefits, and reduced eelgrass and shellfish populations.
- *Piscataqua Region Environmental Planning Assessment 2015* (PREP, 2015) – See "Phase I – Cumulative and Secondary Impacts, Resource Characterization Question 5" response below for a summary of this report. In addition, the 2015 PREPA identifies impervious cover, climate change and nitrogen loading as the greatest threats to the Piscataqua watershed and the Great Bay and Hampton-Seabrook estuaries, prioritizing stormwater management as a method to address some of these threats.
- *City of Portsmouth, New Hampshire Coastal Resilience Initiative* (City of Portsmouth, 2013) - The Coastal Resilience Initiative resulted in a final Climate Change Vulnerability Assessment and Adaptation Plan for the city of Portsmouth, New Hampshire. The project produced sea level rise and coastal storm scenario maps as well as estimates of the financial losses to the city given specific storm and flooding scenarios as well as the predicted costs of various adaptation options, including flood gates and tide barriers.
- *COastal Adaptation to Sea-level rise Tool (COAST) for Hampton, Hampton Falls, and Seabrook, New Hampshire* (New England Environmental Finance Center, 2011) - This project assessed the potential financial costs and benefits to different adaptation actions in towns in the Hampton-Seabrook estuary given different sea level rise and storm scenarios. The benefits of preparing critical infrastructure in the communities for coastal storms and sea level rise outweighed the costs at ratios between 12:1 and 25:1, depending on the town and sea level rise scenario selected.
- *Durham, New Hampshire Climate Adaptation Chapter of the Hazard Mitigation Plan: Developing Strategies to Protect Areas at Risk from Flooding Due to Climate Change and Sea Level Rise* (Strafford RPC, 2013) - The town of Durham, NH developed a new Climate Adaptation Chapter for the town Hazard Mitigation Plan which identifies flooding from sea level rise and storms as a major hazard.
- *New England Adaptation Project: Summary Climate Change Risk Assessment: Dover, New Hampshire* (Wake, Kirshen & Russo, 2014) - The Climate Change Risk Assessment for Dover, NH identified stormwater flooding and heat as the two major climate impacts of concern for the city.

- *Ecosystems and Wildlife: Climate Change Adaptation Plan* (NHF&G, 2013) - The NHF&G developed an amendment to its *Wildlife Action Plan* to consider the hazards and risks associated with climate change. With a focus on sea level rise and freshwater precipitation increases, the plan highlights likely risks to habitats like sea grasses and salt marshes. Changes in salinity and water depth will likely have significant effects on these habitats.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred that could impact the CMP's ability to prevent or significantly reduce coastal hazards risk since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these that address:			
elimination of development/redevelopment in high-hazard areas	N	Y	Y
management of development/redevelopment in other hazard areas	Y*	Y	Y
climate change impacts, including sea level rise or Great Lake level change	Y	Y	Y
Hazards planning programs or initiatives that address:			
hazard mitigation	Y	Y	Y
climate change impacts, including sea level rise or Great Lake level change	Y	Y	Y
Hazards mapping or modeling programs or initiatives for:			
sea level rise or Great Lake level change	Y	Y	Y
other hazards: fluvial erosion and coastal flooding from storms	Y	Y	Y

*Existing regulations include the Shoreland Water Quality Protection Act (RSA 483-B) and the Tidal Buffer Zone setbacks in wetlands law (RSA 482-A). New regulations are described in Question 3 below.

2. Briefly state how "high-hazard areas" are defined in your coastal zone.

   In New Hampshire, coastal "high-hazard areas" are defined as FEMA FIRM zones V, V1-30, and VE. The preliminary flood insurance rate maps that incorporate new coastal data have consolidated the zones by eliminating V and V1-30; therefore, when the preliminary maps are adopted in 2015, "high-hazard areas" will be defined as FEMA flood insurance rate map zone VE.

   In addition to this definition, the state of New Hampshire recognizes Fluvial Erosion Hazard Area Zones, designated along river corridors that present high risks of erosion. Several river segments within the coastal zone have been designated as Fluvial Erosion Hazard Areas, including parts of the

Cocheco River, the Exeter River, and the Lamprey River. Development is limited in designated Fluvial Erosion Zones in order to reduce risk and vulnerability.

3. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

i. Statutes, regulations, policies, or case law interpreting these that address: *Elimination of development/redevelopment in high-hazard areas*

New preliminary FEMA FIRMs were released for New Hampshire coastal communities in 2014. These maps identify updated 100-year (1 percent annual chance storm event) floodplains based on improved data. The floodplains determine flood insurance rates for homeowners. These maps identify new high-hazard areas in the V, V1-30 and VE zones along the coast which has implications for community floodplain management policies. This change was not driven by CZM or 309. Expected outcomes include official adoption of the FEMA FIRMs by communities in 2015 as well as more community participation in the FEMA Community Rating System which requires specific floodplain management policies at local levels.

ii. Statutes, regulations, policies, or case law interpreting these that address: *Management of development/redevelopment in other hazard areas*

In 2013, the New Hampshire legislature approved an addition to local planning and zoning regulations that authorizes coastal management provisions in master plans in order to address planning needs and property loss resulting from projected coastal risks due to increased frequency of storm surge, flooding, and inundation. This CAW-driven, NHCP-supported change promotes climate change planning in coastal communities, and was the result of a 309 strategy identified in the *2011 Section 309 Assessment and Strategy Report*.[1] The town of Rye, New Hampshire recently added climate change considerations to its master plan, based on this enabling legislation.

iii. Statutes, regulations, policies, or case law interpreting these that address: *Climate change impacts, including sea level rise or Great Lake level change*

In addition to the local planning regulations described in section ii above, the state legislature also enacted RSA 483-E in 2013, establishing the New Hampshire Coastal Risks and Hazards Commission. “The commission shall recommend legislation, rules, and other actions to prepare for projected sea level rise and other coastal and coastal watershed hazards such as storms, increased river flooding, and storm water runoff, and the risks such hazards pose to municipalities and state assets in New Hampshire.” (RSA 483-E:3 I) The commission reports to the legislature annually. This change was driven by CAW and supported by NHCP as one outcome of the Adaptation Program Creation and Support strategy identified in the *2011 Section 309 Assessment and Strategy Report*.[1] NHCP expects that this legislation will result in better planning for projected sea level rise and other coastal hazards.

iv. Hazards planning programs or initiatives that address: *Hazard mitigation*

CAW, which was established in 2010 in response to a 309 strategy, has held several community workshops addressing best practices for floodplain management, including minimizing development in high hazard areas. Section 309 funding also supports CAW members Rockingham and Strafford Regional Planning Commissions in their efforts to support hazard mitigation planning. For instance, between 2010 and 2014 Strafford RPC assisted 16 of its communities with updates to their Multi-hazard Mitigation Plans.

The response to Coastal Hazards Resource Characterization Question 5, above, also describes several new studies and projects that have been conducted related to climate change impacts in coastal New Hampshire. While many of these were driven and funded by efforts outside of CZM and 309, NHCP has been involved with aspects of most of these projects.

v. Hazards planning programs or initiatives that address: *Climate change impacts, including sea level rise or Great Lake level change*

Refer to section iv above, as climate change impacts and sea level rise are among the most significant coastal hazards addressed during hazard mitigation planning.

vi. Hazards mapping or modeling programs or initiatives for: *Sea level rise or Great Lake level change*

The Resilient New Hampshire Coasts Project is a CZM-driven NOAA Project of Special Merit which includes both modeling and mapping products. The Sea Level Affecting Marsh Migration (SLAMM) model will use new, more precise data to provide updated information on how salt marshes will be able to adapt to future sea level rise conditions. Data such as the 13 newly verified Sediment Elevation Tables for tidal marsh elevation will be incorporated into the SLAMM model to show if New Hampshire's salt marshes are keeping up with sea level rise. Model results will be mapped in the New Hampshire Coastal Hazards Viewer, available in the spring of 2015, and the resulting data and maps can be used by coastal watershed communities for hazard mitigation planning.

vii. Hazards mapping or modeling programs or initiatives for: *Other hazards- fluvial erosion and coastal flooding from storms*

In 2008, New Hampshire Geologic Survey staff began a Fluvial Geomorphology Assessment program to assist with planning for flood hazard mitigation and river restoration. While this on-going data collection effort is not 309 or CZM-driven, four of the first five rivers assessed as of 2012 were coastal region rivers including the Cocheco, Exeter, Isinglass and Lamprey Rivers. These geomorphic assessments include evaluations of erosion sensitivity, culvert condition, aquatic habitat and other data that municipalities can use for planning, management and restoration efforts that will reduce flood damage in future years. Data will available in a map format on the New Hampshire Coastal Hazards Viewer, which is 309-driven and funded.

Predictions of coastal flooding as a result of storms will be modeled and mapped as part of the Resilient New Hampshire Coasts Project described in section vi above.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	__X__
Medium	_____
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Given the increasing magnitude of storms and accelerating rates of sea level rise that are contributing to intensifying erosion along with more frequent and damaging flooding, habitat destruction, and resource damage, the Coastal Hazards enhancement area is rated as a High priority. This prioritization was supported by members of CAW and the management committee of PREP.

Public Access

Section 309 Enhancement Objective: Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*

Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Use the table below to provide data on public access availability within the coastal zone.

Public Access Status and Trends			
Type of Access	**Current number**	**Changes or Trends Since Last Assessment** (↑, ↓, –, Unknown)	**Cite data source**
Beach access sites	**16**	**–** (Note: Reported 15 sites in 2010, increase due to use of new, more precise database.)	NH Coastal Atlas. 2014
Shoreline (other than beach) access sites	**15**	**–** (Note: Does not include beach or boat access sites.)	NH Coastal Atlas. 2014
Recreational boat (power or non-motorized) access sites	**31**	**–** (Note: Reported 30 sites in 2010, increase due to improved precision listing 2 individual ramps at 1 park separately.)	NH Coastal Atlas. 2014

Public Access Status and Trends			
Type of Access	**Current number**	**Changes or Trends Since Last Assessment** (↑, ↓, –, Unknown)	**Cite data source**
Number of designated scenic vistas or overlook points	**31**	–	NHCP Section 309 Enhancement Grants Program Assessment and Strategy. 2001, 2006 and 2011.
Number of fishing access points (i.e. piers, jetties)	**14**	↑ (Does not include beach access for fishing.)	NH Office of Energy and Planning, "Access Sites to Public Waters" GIS coverage. 2012 Revision.
Coastal trails/ boardwalks	No. of Trails/ boardwalks **27** Miles of Trails/boardwalks **64.7 mi.**	– (Distance reported is 26.6 miles less than in 2010, but difference is due to elimination of trail duplication in the report, such as a single trail listed twice for hiking and cross country skiing.)	www.trails.com
Number of acres parkland/open space	Total sites **449** **19,118 ac** Sites per miles of shoreline **24.9**	Unknown (Note: This is the number and area of conservation parcels, primarily fee ownership, in the coastal zone.)	Society for the Protection of New Hampshire Forests. "Conservation/Public Lands" GIS coverage. 2013 Revision.
Other (please specify)	N/A	N/A	N/A

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties. There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan, the National Survey on Fishing, Hunting, and Wildlife Associated Recreation, and your state's tourism office.

   The population within the state's coastal shoreline counties is projected to increase (or decrease) by _+13_ percent between 2010 and 2020.[13]

Nearly 78 percent of New Hampshire's beaches along the coast are publicly owned either by the State or local communities. The public has 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. Based on stakeholder feedback, the only type of access lacking within the Great Bay Estuary is a year-round all-tide small craft boat launch. A launch of this type has been proposed at Hilton Park in Dover.

Travel spending throughout New Hampshire declined between 2008 and 2010 due to the recent economic recession, but began increasing between 2010 and 2012 as the economy improved. Travel

[13] NOAA Coastal Population Report: 1970-2020 (Table 5, pg. 9): http://stateofthecoast.noaa.gov/coastal-population-report.pdf.

spending in the New Hampshire coastal region increased 8.6 percent between 2010 and 2012, compared to 11.0 percent across the state.[14]

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 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 2013-2018. The surveys do not poll stakeholders on coastal access specifically; however they do poll New Hampshire residents on their outdoor recreation priorities and interests. For example, surveys conducted for the most recent report revealed that the greatest demand for recreation were for youth activities and for sites close to major population centers. In addition, the 2013-2018 SCORP reports that Rockingham County, one of New Hampshire's two coastal counties, has the highest number, 65, of water sports areas and fishing access sites in the state (NHOEP, 2012).

Data published by the U.S. Fish and Wildlife Service in their *2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation* report indicates that 228,000 anglers fished in New Hampshire in 2011, a slight decrease in the number of anglers of compared to 2006. However, of these anglers, an estimated 22 percent fished in saltwater in 2011,[15] compared to only 20 percent in 2006,[16] indicating that saltwater fishing has increased by about 2000 anglers despite the slight decrease in fishing of all types across the entire state.

3. If available, briefly list and summarize the results of any additional data or reports on the status or trends for coastal public access since the last assessment.

   Surveys and Reports on New Hampshire Outdoor Recreation

   - *New Hampshire Public Waters Access Advisory Board 2012 Annual Report* (NH PWAAB, 2014) - The 2012 annual report outlined an NHCP funded project carried out by the New Hampshire Department of Resources and Economic Development to rebuild the bathhouse at the North Hampton Beach. NHCP grant funds were used to connect the new bathhouse to the municipal sewer system. NHCP funds also helped the City of Portsmouth acquire a one-acre island in Sagamore Creek in September 2012. A conservation easement, including public access opportunities, will be placed on the property.
   - *UNH Carsey Institute, NH Listens: Statewide Community Conversations on Outdoor Recreation in New Hampshire* (UNH Carsey Institute, 2011) - During listening sessions, New Hampshire residents expressed an increased acknowledgement of the benefits of outdoor recreation, particularly for youth; a need for recreation sites near population centers; and recognition of the important economic impact of outdoor recreation in New Hampshire.
   - *UNH Cooperative Extension's New Hampshire Recreation and Conservation Leaders Survey 2011* (UNH Cooperative Extension, 2011) - Key stakeholders and conservation leaders focused on the need for additional public access to outdoor recreation, more connectivity between existing recreational areas, increased outdoor and environmental education opportunities for children,

[14] New Hampshire Fiscal Year 2012 Tourism Satellite Account: https://www.plymouth.edu/institute-for-new-hampshire-studies/files/2011/04/Tourism-Satellite-Account-2012.docx.

[15] U.S. Fish and Wildlife Service and U.S. Census Bureau. *2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation—New Hampshire*. http://www.census.gov/prod/2013pubs/fhw11-nh.pdf.

[16] U.S. Fish and Wildlife Service and U.S. Census Bureau. *2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation—New Hampshire*. http://www.census.gov/prod/2008pubs/fhw06-nh.pdf.

the need for strong stewardship partnerships, and a concern for environmental impacts resulting from multiple user groups.

Surveys and Reports focused on the New Hampshire Coastal Region

- *Final Report of the Commission to Study the Causes, Effects, and Remediation of Siltation in the Great Bay Estuary* (State of New Hampshire, 2010) - Recreational Use Survey results indicated a need for more public access, especially all-tide, small boat access.
- *Northeast Regional Ocean Council 2012 Northeast Recreational Boater Survey* (Sea Plan, 2012) - This survey showed that most boating occurs close to shore and along major transit routes, such as those around Portsmouth and the Isles of Shoals. The survey also showed the location and types of activities recreational boaters conducted while boating in New Hampshire. The most popular activity was fishing (42 percent).

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could impact the future provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	N	N
Operation/maintenance of existing facilities	Y	Y	N
Acquisition/enhancement programs	Y	Y	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

There have been no significant changes in the Public Access management categories since the last assessment. However, note the description of the North Hampton Beach bathhouse project and the Sagamore Creek island acquisition in the Resource Characterization section, question #3, above.

3. Indicate if your state or territory has a publically available public access guide. How current is the publication and how frequently it is updated?

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	Y	Y	Y
Web address (if applicable)	http://des.nh.gov/organization/divisions/water/wmb/coastal/documents/coastal_access_map.pdf	http://xml2.des.state.nh.us/CoastalAtlas/Atlas.html	http://xml2.des.state.nh.us/CoastalAtlas/Atlas.html
Date of last update	April 2007	Daily as necessary	Daily as necessary
Frequency of update	As necessary	As necessary for Beach and Shellfish advisory updates	As necessary for Beach and Shellfish advisory updates

The online New Hampshire Coastal Atlas was released in 2014. This internet-based product provides the public with quick access to information on shellfish harvest opportunities and closures, beach swimming advisories, and coastal public access sites. The shellfish and beach advisories are updated as the information becomes available. The public access information will be revisited as capacity and resources permit. The mobile version of this product includes a geo-location feature to help users get directions to where they want to go while using their mobile devices.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High _____
Medium __X__
Low _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Given the prevalence of direct public access to coastal resources in the New Hampshire coastal zone, but because stakeholders and the public have expressed a need for additional access and educational outreach, this enhancement area is rated as a Medium priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP.

Marine Debris

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. §309(a)(4)

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*
Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. In the table below, characterize the existing status and trends of marine debris in the state's coastal zone based on the best available data.

Source of Marine Debris	Existing Status and Trends of Marine Debris in Coastal Zone		
	Significance of Source (H, M, L, unknwn)	**Type of Impact** (aesthetic, resource damage, user conflicts, other)	**Change Since Last Assessment** (↑, ↓, –, unkwn)
Land-based			
Beach/shore litter	High	Aesthetic & Resource Damage	–
Dumping	Medium	Aesthetic & Resource Damage	–
Storm drains and runoff	Medium	Aesthetic & Resource Damage	–
Fishing (e.g., fishing line, gear)	Low	Aesthetic, Resource Damage & User Conflicts	–
Other (please specify): Wastewater treatment disks*	Low	Aesthetic	↑
Ocean or Great Lake-based			
Fishing (e.g., derelict fishing gear)	High	Aesthetic, Resource Damage & User Conflicts	–
Derelict vessels	Low	Aesthetic & Resource Damage	–
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	Low	Aesthetic & Resource Damage	–
Hurricane/Storm	Medium	Aesthetic & Resource Damage	–
Tsunami	N/A	N/A	N/A
Other (please specify)	N/A	N/A	N/A

*In March 2011, the Hooksett, NH Wastewater Treatment Facility accidentally released between 4 million and 8 million plastic disks used to enhance the wastewater treatment capacity of the plant. The disks were released into the Merrimack River during a storm. They have subsequently been found along the banks of the Merrimack River downstream over 65 miles to its mouth, as well as on beaches and in estuaries in New Hampshire, Massachusetts and Maine. The white plastic disks, approximately 2 inches in diameter, continue to be collected along the New Hampshire coast more than three years later.

2. If available, briefly list and summarize the results of any additional state or territory-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.

- New Hampshire Marine Debris to Energy Project[17] – This project reports on the amount and type of debris collected on New Hampshire beaches, and reported to the project's website, from 2006 to present. Between 2006 and 2013, the amount of debris collected has ranged from a high of 12,386 lbs. in 2009 to a low of 5,288 lbs. in 2011. In 2013, 2,191 volunteers collected 7,876 lbs. of debris at 40 locations during 231 clean-up events. This project is supported by the NOAA Marine Debris Program and other partners.
- New Hampshire Coastal Cleanup – The Blue Ocean Society for Marine Conservation (BOS) coordinates the New Hampshire Coastal Cleanup in conjunction with the Ocean Conservancy's International Coastal Cleanup, utilizing funding from the NHCP. BOS has been coordinating this effort since 2005. Since that time, a range of 907 (2012) to 1,557 (2008) volunteers have been involved per year. The pounds per trash removed has ranged from 8,037 (2011) to 2,125 (2013) and appears to be on the decline, but this decline has happened amid the presence of regular monthly cleanups/maintenance on the beaches.[18]
- *New Hampshire Public Waters Access Advisory Board Annual Reports* (NH PWAAB, 2014) – The 2012 report described the NHCP support of the BOS's beach cleanup programs, including the Adopt-a-Beach Program, International Coastal Cleanup Day, and the monthly marine debris monitoring program at Jenness Beach. The NHCP funded 155 beach cleanups that removed an estimated total 12,711 pounds of marine debris, helping to keep public access sites along the coast clean and more enjoyable for visitors. BOS uses data from the cleanups, along with informative educational materials developed in past projects, to better inform the public of the prevalence and impacts of marine pollution.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.

Management Category	**Employed by State/Territory** (Y or N)	**CMP Provides Assistance to Locals that Employ** (Y or N)	**Significant Changes Since Last Assessment** (Y or N)
Marine debris statutes, regulations, policies, or case law interpreting these	Y	N	N
Marine debris removal programs	Y	Y	N

The New Hampshire Fish and Game Department currently has regulations concerning the molestation of lobster traps. RSA 211:31 states 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." While these regulations can impede coastal clean-up efforts, BOS, along with their project partners New Hampshire Sea Grant and UNH Cooperative Extension, have

[17] http://cecf1.unh.edu/debris/index.cfm. See Beach Debris Data page for statistics.
[18] Jen Kennedy, Executive Director, Blue Ocean Society for Marine Conservation. Personal communication. August 2014. Note that statistics reported for the New Hampshire Coastal Cleanup have not been included in the statistics reported for the New Hampshire Marine Debris to Energy Project.

developed a working relationship with New Hampshire Fish and Game that has allowed for the approved removal of derelict gear on a case-by-case basis. For example, in 2012, over 70 lobster traps were removed from White Island at the Isles of Shoals under the presence of a conservation officer. Based on conversations with New Hampshire Fish and Game, it is unlikely that there will be a push to change regulations regarding trap cleanup, but New Hampshire Fish and Game will continue to make officers available to supervise derelict gear removal as time and funding allows.[19]

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes and likely future outcomes of the changes.

There have been no significant changes in the Marine Debris management categories since the last assessment. However, note the data collected by the Marine Debris to Energy Project in the Resource Characterization section, question #2, above, which was a very successful significant management change described in the prior assessment report.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	__X__
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Given that analysis of the Marine Debris Enhancement Area did not identify any high priority needs relative to debris that are not already being addressed, but because several sources of marine debris are still considered highly or moderately significant, this enhancement area is rated as a Medium priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP.

Cumulative and Secondary Impacts

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.§309(a)(5)

[19] Jen Kennedy, Executive Director, Blue Ocean Society for Marine Conservation. Personal communication. August 2014.

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states.)*
Purpose: To quickly determine whether or not cumulative and secondary impacts is a priority enhancement objective for the CMP that warrants a more in-depth assessment to understand key problems and opportunities that exist for program enhancement as well as the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Using National Ocean Economics Program Data on population and housing,[20] please indicate the change in population and housing units in the state's coastal counties between 2012 and 2007. You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970) but, at a minimum, please show change over the most recent five year period (2012-2007) to approximate current assessment period.

Trends in Coastal Population and Housing Units (Rockingham and Strafford counties)				
Year	**Population**		**Housing**	
	Total (# of people)	% Change (compared to 2002)	Total (# of housing units)	% Change (compared to 2002)
2007	418,124	0.91%	173,748	3.22%
2012	421,939		179,335	

2. Using provided reports from NOAA's Land Cover Atlas[21] or high-resolution C-CAP data (Pacific and Caribbean Islands only), please indicate the status and trends for various land uses in the state's coastal counties between 2006 and 2011. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different timeframe than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico and CNMI currently only have data for one time point so will not be able to report trend data. Instead, Puerto Rico and CNMI should just report current land use cover for developed areas and impervious surfaces.

Distribution of Land Cover Types in Rockingham and Strafford Counties		
Land Cover Type	**Land Area Coverage in 2010 (Square Miles)**	**Gain/Loss Since 2006 (Square Miles)**
Developed, High Intensity	47.77	2.59
Developed, Low Intensity	78.59	4.88
Developed, Open Space	35.36	0.48
Grassland	10.33	0.62
Scrub/Shrub	49.06	6.36
Barren Land	10.13	0.62
Open Water	105.12	0.01
Agriculture	85.32	-3.30
Forested	589.15	-11.92
Woody Wetland	130.13	-0.19
Emergent Wetland	31.43	-0.16

[20] http://www.oceaneconomics.org/. Enter "Population and Housing" section. From dropdown boxes, select your state, and "all counties". Select the year (2012) and the year to compare it to (2007). Then select "coastal zone counties". Finally, be sure to check the "include density" box under the "Other Options" section.
[21] http://coast.noaa.gov/ccapatlas/.

3. Using provided reports from NOAA's Land Cover Atlas[21] or high-resolution C-CAP data (Pacific and Caribbean Islands only), please indicate the status and trends for developed areas in the state's coastal counties between 2006 and 2011 in the two tables below. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different timeframe than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico and CNMI currently only have data for one time point so will not be able to report trend data. Unless, Puerto Rico and CNMI have similar trend data to report on changes in land use type, they should just report current land use cover for developed areas and impervious surfaces.

Development Status and Trends for Rockingham and Strafford Counties			
	2006	**2010**	**Percent Net Change**
Percent land area developed	13.12%	13.79%	5.01%
Percent impervious surface area	4.59%	4.87%	5.73%

How Land Use is Changing in Rockingham and Strafford Counties	
Land Cover Type	**Areas Lost to Development Between 2006-2010** (Square Miles)
Barren Land	0.44
Emergent Wetland	0.14
Woody Wetland	0.22
Open Water	0.04
Agriculture	2.92
Scrub/Shrub	0.91
Grassland	0.46
Forested	3.48

4. Using data from NOAA's State of the Coast "Shoreline Type" viewer,[22] indicate the percent of shoreline that falls into each shoreline type.[23] You may provide other information and/or use graphs or other visuals to help illustrate.

Shoreline Types		
Surveyed Shoreline Type	**Miles of shoreline***	**Percent of Shoreline**
Mixed Sand and Gravel Beaches	1.38	0.6%
Exposed Tidal Flats	11.11	5.0%
Salt- and Brackish-water Marsh	163.42	73.6%
Scrub-Shrub Wetlands	0.24	0.1%
Exposed rocky shores	0.51	0.2%
Exposed, Wave-cut Platforms in Bedrock	2.76	1.2%
Fine- to Medium-grained Sand Beaches	0.86	0.4%
Gravel Beaches	7.97	3.6%

[22] http://stateofthecoast.noaa.gov/shoreline/welcome.html.

[23] Note: Data is from NOAA's Environmental Sensitivity Index (ESI) Maps. Use a footnote to convey data's age and source (if other than ESI maps). http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html.

Shoreline Types (cont.)		
Surveyed Shoreline Type	Surveyed Shoreline Type	Surveyed Shoreline Type
Riprap	5.25	2.4%
Sheltered Rocky Shores	4.63	2.1%
Sheltered, Solid Man-made Structures	3.47	1.6%
Sheltered Riprap	7.41	3.3%
Sheltered Tidal Flats	13.13	5.9%

*Based on 2014 NOAA ESI data. Not all coastal miles were mapped.

5. If available, briefly list and summarize the results of any additional state or territory-specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality and habitat fragmentation, since the last assessment to augment the national datasets.

- *Great Bay Nitrogen Non-Point Source Study* (Trowbridge et al., 2014) – This report summarizes research conducted by NHDES on the relative contribution of non-point sources of nitrogen to the estuary. Overall, 68 percent of the nitrogen that ends up in the Great Bay Estuary originates from non-point sources (approximately 800 tons/yr); the remainder derives from direct discharges of municipal wastewater treatment facilities. The model predicts that 42 percent of non-point source nitrogen comes from atmospheric deposition, 29 percent from human waste from septic systems, 15 percent from chemical fertilizer and 14 percent from animal waste. The model also concludes that 34 percent of the nonpoint source loads were delivered through stormwater.
- *Piscataqua Region Environmental Planning Assessment 2015* (PREP 2015) – The 2015 PREPA provides a comprehensive review of the current state of municipal environmental regulations in place in the 52 New Hampshire and Maine communities in the Piscataqua Region watershed. The results of the review show that although communities value their natural resources and have taken steps to manage those resources, there are critical protections still needed in most communities throughout the watershed. Recommended actions include consistent, region-wide buffer and setback regulations, land conservation, and incorporating stormwater management similar to the model developed by the Southeast Watershed Alliance.
- *PREP's State of Our Estuaries Report* (PREP, 2013) – See "Phase I - Wetlands, Resource Characterization Question 2" response above for a summary of this report.
- *Lamprey River Water Management Plan* (NHDES, 2013) – This water management plan, described more fully in Question 2 below, was developed as part of the New Hampshire Instream Flow Program Pilot Study. The goal of the study was to determine the amount of water needed to support the human and natural uses that depend on the river. The management plan details the actions to be implemented to maintain the protected instream flows on the Lamprey River, guide water use, and minimize negative consequences to any particular user or natural use.
- *New Hampshire Nonpoint Source Management Program Plan* (NHDES, 2014) – The goal of New Hampshire's Nonpoint Source Program is to protect and restore clean water in the state's rivers, lakes, estuaries, and other waters from the negative impacts of nonpoint source pollution. Specifically, the NPS Program works toward improving land management practices such that water quality in impaired watersheds is restored and water quality in healthy watersheds is not degraded as a result of land use activities. The NPS Program partners with many organizations, including coastal watershed partners, to develop and implement the Plan. This update of the

1999 NPS Plan establishes specific, short-term objectives and measurable milestones to be accomplished over the next five years to work toward attaining long-term NPS Program goals.

- *Model Stormwater Standards for Coastal Watershed Communities* (UNH Stormwater Center and RPC, 2012) – This model, compiled by the Southeast Watershed Alliance and funded by the NHCP, offers minimum, consistent, and enforceable stormwater management standards for coastal watershed communities. The standards encourage the use of Low Impact Development strategies, build upon innovative stormwater standards recently adopted by several coastal watershed communities, and are consistent with EPA Region 1 and NHDES guidelines. Adoption of the model stormwater standards can provide consistent water quality protection throughout New Hampshire's coastal watershed.
  On January 9, 2015, this model was also used as the basis for a presentation titled "The Effect of Local Stormwater Regulations on Future Nitrogen Loads in the Oyster River Watershed," given by Jaime Houle of the UNH Stormwater Center and Bill Arcieri of VHB, Inc. at the 2015 Lamprey River Symposium. The talk summarized research that combined the use of the Model Stormwater Standards with a 2040 build-out analysis for the Oyster River watershed communities to examine the potential effect of the standards on Total Suspended Solids, Total Nitrogen, and Total Phosphorus. Model results suggested significant reductions of all of these pollutants could be achieved.[24]
- *Analysis of Nitrogen Loading Reductions for Wastewater Treatment Facilities and Non-Point Sources in the Great Bay Estuary Watershed - DRAFT* (Trowbridge, 2010) - This report describes models developed by NHDES to estimate the existing nitrogen loads to each of the impaired sub-estuaries and predict the watershed nitrogen load thresholds needed to meet the 0.3 mg nitrogen/liter criteria that will protect eelgrass beds in the estuary. Due to the need to address significant feedback on the draft version of this report, a final report has not yet been published.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state-level changes (positive or negative) in the 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, since the last assessment?

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Guidance Documents	Y	Y	N
Management Plans (including SAMPs)	Y	Y	Y

2. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

[24] Presentation slides posted at http://www.wrrc.unh.edu/2015-lamprey-river-symposium.

a. Describe the significance of the change;
b. Specify if it was a 309 or other CZM-driven change; and
c. Characterize the outcomes and/or likely future outcomes of the changes(s).

On August 28, 2013, NHDES Commissioner Thomas S. Burack adopted the *Lamprey River Water Management Plan* (NHDES, 2013). This plan not only establishes seasonal minimum flows designed to ensure that both human and natural uses of the river can be met and that fresh water continues to flow to the estuary, but it also outlines specific actions required by water users and dam owners during periods of chronic low flows. Water users are required to conserve water during low flow periods and may need to cease withdrawing all but a very minimal amount of water during extreme low flow events. Dam owners on the Lamprey River may be required to release water from impoundments to alleviate extreme low flows and have also been required to impound more water during some seasons in order to allow for these relief flows. This management change was not driven by NHCP, but will have future impact on the Cocheco, Exeter-Squamscott, Isinglass, and Oyster Rivers if the pilot program is deemed successful and the Instream Flow Program is expanded.

In November 2013, New Hampshire adopted interim rules to improve efficiency in the use of road salt across the state. Commercial salt applicators who have completed the UNH Technology Transfer Center's Green SnowPro training program can apply to NHDES for a voluntary certificate. Under the new rules, these certified salt applicators that follow best management practices and keep basic records, and the property owners who hire them, are provided with limited liability for damages arising from hazards caused by snow or ice.[25] These new rules were not CZM-driven, but are expected to reduce salt levels in freshwater streams, ponds and wetlands throughout the more densely developed portions of the coastal region.

Effective January 2014, the New Hampshire legislature has placed limits on the levels of nitrogen and phosphorus in lawn fertilizers that can be sold in retail stores. The purpose of these limits is to reduce nutrient pollution from nonpoint sources to Great Bay and New Hampshire's lakes and ponds. These changes to RSA 431 were supported by NHDES and CZM and are expected to lower nitrogen levels in Great Bay by reducing nutrient runoff.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	__X__
Medium	_____
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   Given the heightened concern with the degradation of Great Bay combined with the development pressures for New Hampshire's coastal communities, the Cumulative and Secondary Impacts enhancement area rated as a High priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP.

[25] See *new law and interim rules* document at http://des.nh.gov/organization/divisions/water/wmb/was/salt-reduction-initiative/salt-applicator-certification.htm.

Special Area Management Planning

Section 309 Enhancement Objective: Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act 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."

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states and territories.)*
Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. In the table below, identify geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a SAMP. This can include areas that are already covered by a SAMP but where new issues or conflicts have emerged that are not addressed through the current SAMP.

Geographic Area	Opportunities for New or Updated Special Area Management Plans
	Major conflicts/issues
Offshore waters	Offshore structures competition for area used for commercial fishing and the loss of marine habitat.
Great Bay Estuary watershed, Hampton-Seabrook Estuary watershed and the Atlantic Coast	Resources management, living resources and habitat restoration, and land use and habitat protection.
Estuarine waters	Competing use of the waters for shellfish harvest versus recreational boating.
Great Bay Estuary	Habitat loss due to degradation of water quality.
Beaches, state- and town-owned	Differences in sand deposition and erosion leading to costs in nourishing or removing sand from beaches.
Great Bay Estuary watershed	Pollutant reductions required by point and non-point sources.
Coastal Zone	Conflict between development for economic stability versus need to prepare for coastal hazards, especially long-term planning needed due to future sea level rise, including primary and secondary impacts.

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of SAMPs since the last assessment.

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:

- *New Hampshire Estuary Spatial Planning Project: Coordinating Data to Assess Our Ecosystem Services* (In Progress, due September 2015)[26] – This project, described more fully in the Summary of Recent Section 309 Achievements section, will coordinate the collection, integration, and accessibility of existing spatial data for New Hampshire's Hampton-Seabrook and Great Bay estuaries. The overall goal is to help improve management decisions. For example, re-organized, centralized and publically available spatial datasets will be used to assess the economic tradeoffs among different possible future activities in Great Bay, informing how coastal managers consider the many new and existing uses vying for space in the bay.
- *Oyster River Management Plan* (ORLAC, 2014) – The Strafford Regional Planning Commission has coordinated with local, regional, and state partners to develop, on behalf of the Oyster River Local Advisory Committee, a management plan for the Oyster River to improve river protection and complete ongoing local efforts to address the use and conservation of the river corridor and its watershed. The Plan identifies short-term, intermediate, and long-term goals, along with objectives and actions to address them. The river is a secondary drinking water source for the Town of Durham and UNH.
- *PREP's State of Our Estuaries Report* (PREP, 2013) – See "Phase I - Wetlands, Resource Characterization Question 2" response above for a summary of this SAMP.
- *Oyster River Integrated Watershed Plan for Nitrogen Load Reductions - Final Technical Report* (VHB, 2014) – This document describes an Integrated Watershed Planning and Permit approach to allow the Town of Durham and UNH to combine planning and implementation efforts to develop effective and sustainable solutions to reduce nitrogen loading within the same watershed. Since both the Town and UNH share the same Wastewater Treatment Facility and have adjacent regulated municipal stormwater systems that discharge to the Oyster River Estuary, the use of this Integrated Planning and Permit approach is a means to address water quality objectives in an effective, economical and socially responsible manner.
- *Lamprey River Water Management Plan* (NHDES, 2013) – See "Phase I - Cumulative and Secondary Impacts, Resource Characterization Question 5" response above for a summary of this SAMP.
- *2013 Lamprey Rivers Management Plan* (LRAC, 2013) – This update of the original 1995 Lamprey River Corridor Management Plan and its 2007 revision addresses not only previously identified concerns such as the need for public outreach, the benefits of good land stewardship, and the impacts to water quality and habitat in the coastal region resulting from development, but also newer concerns including increased demand for drinking water and the challenges of more frequent extreme weather events, both wet and dry.
- *New Hampshire Nonpoint Source Management Program Plan* (NHDES, 2014) – See "Phase I - Cumulative and Secondary Impacts, Resource Characterization Question 5" response above for a summary of this SAMP.

[26] http://des.nh.gov/organization/divisions/water/wmb/coastal/restoration/nh-esp.htm.

- *Great Bay National Wildlife Refuge Comprehensive Conservation Plan* (USF&WS, 2012) – This plan presents the management goals, objectives, and strategies that will guide management decisions and actions on the Great Bay Refuge for the following 15 years. It also helps New Hampshire natural resource agencies, conservation partners, local communities, and the public understand Great Bay Refuge priorities in order to better work with the Refuge to achieve common goals.
- *Model Stormwater Standards for Coastal Watershed Communities* (UNH Stormwater Center and RPC, 2012) - See "Phase I - Cumulative and Secondary Impacts, Resource Characterization Question 5" response above for a summary of this New Hampshire NHCP-funded SAMP.
- *Exeter-Squamscott River Watershed Management Plan Update* (ESRLAC, 2012) – This plan provides "the Exeter-Squamscott River Local Advisory Committee, landowners, municipal officials, municipal boards and committees, and regional and state agencies and organizations with an action plan for working together to protect water quality, water quantity, wildlife habitat and recreational opportunities in the watershed."
- *2010 Piscataqua Region Comprehensive Conservation and Management Plan* (PREP, 2010) – This plan is an update of the 2000 plan and "addresses current and emerging issues impacting the water quality and environmental health of estuaries in the Piscataqua Region. The 10-year plan includes seven goals, 35 objectives, and 82 action plans that were developed through an extensive 18-month process involving 159 stakeholders representing federal and state resource management agencies, nongovernment organizations, industry, legislators, and the 52 communities of the Piscataqua Region. Action plans are categorized by critical theme areas, including water resources, land use and habitat protection, living resources and habitat restoration, and watershed stewardship."

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPs in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
SAMP policies, or case law interpreting these	Y	Y	N
SAMP plans*	Y	Y	N

* NHCP does not develop formal SAMPs but instead develops or provides input on management plans and planning documents that contain the same elements as a formal SAMP.

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

There have been no significant changes in SAMP policies or the types of management plans written since the last assessment. Most of the plans described above are updates to pre-existing plans. Even the *New Hampshire Estuary Spatial Planning Project* currently in progress and described in the Summary of Recent Section 309 Achievements section is part of an ongoing effort to make spatial data for the Coastal Zone more accessible to the public and to local policy decision-makers.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	__X__
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Review of Special Area Management Planning needs did not identify any high priority gaps or requirements that are not already being addressed by existing management resources and tools. However, given the importance of ensuring that any new planning needs are met and that existing planning tools are updated, this enhancement is rated as a Medium priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP.

Ocean and Great Lakes Resources

Section 309 Enhancement Objective: Planning for the use of ocean [and Great Lakes] resources. §309(a)(7)

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states and territories.)*
Purpose: To quickly determine whether or not ocean and Great Lakes resources is a priority enhancement objective for the CMP that warrants a more in-depth assessment to understand key problems and opportunities that exist for program enhancement as well as the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. Using the Economic: National Ocean Watch,[27] indicate the status of the ocean and Great Lakes economy as of 2010* as well as the change since 2005 in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. Note ENOW data is not available for the territories. The territories can provide alternative data, if available, or a general narrative, to capture the value of their ocean economy.

[27] http://www.coast.noaa.gov/enowexplorer/.

Status of Ocean and Great Lakes Economy for Coastal Counties (2012)				
	Establishments (# of Establishments)	**Employment** (# of Jobs)	**Wages** (Millions of Dollars)	**GDP** (Millions of Dollars)
Living Resources	26	575	$14.0	$42.9
Marine Construction	8	77	$3.0	$5.8
Marine Transportation	40	6,225	$589.2	$1,000
Offshore Mineral Extraction	16	45	$1.8	$13.9
Tourism & Recreation	452	6,996	$127.4	$279.7
All Ocean Sectors	549	13,919	$735.4	$1,400

Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2012)				
	Establishments (% change)	**Employment** (% change)	**Wages** (% change)	**GDP** (% change)
Living Resources	NA	NA	NA	NA
Marine Construction	-20.0	-13.5	+222.9	+205.3
Marine Transportation†	NA	NA	NA	NA
Offshore Mineral Extraction	-11.1	-11.8	+38.5	NA
Tourism & Recreation	+9.7	+6.1	+18.4	+16.3
All Ocean Sectors	+6.4	+69.8	+391.6	+249.3

* 2012 data is available at ENOW and was used to complete the tables above.

† 2012 Marine Transportation data includes industry sector data that was not available for 2005. Therefore, the data is not comparable across these years.

2. In the table below, characterize how the threats to and use conflicts over ocean and Great Lakes resources in the state or territory's coastal zone have changed since the last assessment.

Significant Changes to Ocean and Great Lakes Resources and Uses	
Resource/Use	**Change in the Threat to the Resource or Use Conflict Since Last Assessment** (↑, ↓, –, unkwn)
Resource	
Benthic Habitat (including coral reefs)	↑ [dredging & dredge material disposal, aquaculture, water quality (eelgrass), ocean acidification]
Living marine resources (fish, shellfish, marine mammals, birds, etc)	↑ (dredging, ocean acidification)
Sand/gravel	– ‡
Cultural/historic	–
Other (please specify)	–
Use	
Transportation/navigation	–
Offshore development	–
Energy Production	– §

Significant Changes to Ocean and Great Lakes Resources and Uses	
Resource/Use	**Change in the Threat to the Resource or Use Conflict Since Last Assessment** (↑, ↓, –, unkwn)
Fishing (Commercial and Recreational)	–
Recreation/Tourism	–
Sand/gravel extraction	–
Dredge disposal	–
Aquaculture	↑ (several new commercial aquaculture facilities since last assessment – see Aquaculture Phase I Assessment for details)
Other (please specify)	N/A

‡ While there are currently no direct threats to sand/gravel resources in New Hampshire's coastal zone, there is heightened interested in offshore sand/gravel resources as a result of Hurricane Sandy. For example, the Bureau of Ocean Energy Management (BOEM) is proposing to conduct Geological and Geophysical activities in the Atlantic Outer Continental Shelf (3-8 nautical miles offshore) to identify sand and gravel resources. BOEM has also funded a University of New Hampshire/New Hampshire Geological Survey study to assess New Hampshire's offshore sand resources. Finally, the NROC has established a Regional Sand Management Work Group.

§ Proposed UNH tidal, wave and wind technology testing areas are still awaiting necessary state and federal approvals (see *Energy & Government Facility Siting Phase I Assessment* following).

3. For the ocean and Great Lakes resources and uses in Table 2 (above) that had an increase in threat to the resource or increased use conflict **in the state or territory's coastal zone since the last assessment,** characterize the major contributors to that increase.

Major Contributors an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources												
Resource	**Major Reasons Contributing to Increased Resource Threat or Use Conflict** (Note All that Apply with "X")											
	Land-based development	Offshore development	Polluted runoff	Invasive species	Fishing (Comm & Rec)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean Acidification	Habitat Restoration
Benthic Habitat	X		X			X			X		X	
Living Marine Resources	X		X						X		X	
Aquaculture							X					X

4. If available, briefly list and summarize the results of any additional state or territory-specific data or reports on the status and trends of ocean and Great Lakes resources and/or threats to those resources since the last assessment to augment the national datasets.

No reports on the status or trends of Ocean Resources or threats to ocean resources since the last assessment are available.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if any significant state or territory-level changes (positive or negative) in the management of ocean and Great Lakes resources have occurred since the last assessment?

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	N
Regional Comprehensive Ocean/Great Lakes Management Plans	N (Regional Ocean Plan under development)	N	Y (Nat'l Ocean Policy – 2010)
State Comprehensive Ocean/Great Lakes Management Plans	N	N	N
Single-sector Management Plans	Y	N	Y

2. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

    a. Describe the significance of the change;
    b. Specify if it was a 309 or other CZM-driven change;
    c. Characterize the outcomes and/or likely future outcomes of the changes(s).

    Regional Comprehensive Ocean Management Plans -
    In June 2010 the President signed an Executive Order establishing a comprehensive, integrated National Policy (National Ocean Policy) for the stewardship of the ocean, coasts, and Great Lakes. The Executive Order provided for the development of coastal and marine spatial plans that build upon and improve existing federal, state, tribal, local, and regional decision-making and planning processes. Consistent with the National Ocean Policy, the Northeast Regional Planning Body (RPB) was established in 2012 to develop the Northeast's ocean plan and oversee its implementation. NHDES Commissioner Tom Burack is one of two individuals selected by the Governor to represent New Hampshire on the Northeast RPB. NHCP staff provides support to the Commissioner as the Northeast RPB works to develop a regional ocean plan by the fall of 2015. While not driven by a 309 or CZM change, the NHCP is a member of NROC and has been supporting regional ocean planning efforts in the region prior to 2010.

    The anticipated outcome of the change will be the development of a Northeast Regional Ocean Plan that identifies areas most suitable for various types or classes of activities in order to reduce conflicts among uses, reduce environmental impacts, and facilitate compatible uses.

Single-sector Management Plans -
NHF&G has developed management and monitoring plan for rainbow smelt. Due to a declining rainbow smelt population, NHF&G is proposing changing the management plan by reducing harvest levels of rainbow smelt by 60 percent beginning in 2014. The proposed harvest reductions are not driven by a 309 or CZM change, but rather represent a management response by NHF&G to improve the population of rainbow smelt.

3. Indicate if your state or territory has a comprehensive ocean/Great Lakes Management Plan.

Comprehensive Ocean/Great Lakes Management Plan	State Plan	Regional Plan
Completed plan (Y/N) (If yes, specify year completed)	N	N
Under development (Y/N)	N	Y
Web address (if available)	N/A	http://neoceanplanning.org/
Area covered by plan	N/A	Gulf of Maine to Long Island Sound

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High _____
Medium __X__
Low _____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Given the importance of developing a Northeast ocean management plan to support ecosystem-based management of the region's ocean resources and its human uses, but because NROC's Ocean Planning Committee is well-established and its workgroups are already making progress on the ocean plan in the priority areas of communications, maritime commerce, natural resources, recreation, recreational fishing, and sand management, this enhancement area is rated as a Medium priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP.

Energy and Government Facility Siting

Section 309 Enhancement Objective: 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. §309(a)(8)

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states and territories.)*
Purpose: To quickly determine whether or not energy and Government facilities is a priority enhancement objective for the CMP that warrants a more in-depth assessment. The in-depth assessment would enable CMPs to understand key problems and opportunities that exist for program enhancement as well as the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. In the table below, characterize the status and trends of different types of energy facilities and activities in the state or territory's coastal zone based on best available data. If available, identify the approximate number of facilities by type. The MarineCadastre.gov may be helpful in locating many types of energy facilities in the coastal zone.

Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	**Exists in CZ**		**Proposed in CZ**	
	(# or Y/N)	Change Since Last Assessment (↑, ↓, –, unknown)	(# or Y/N)	Change Since Last Assessment (↑, ↓, –, unknown)
Energy Transport				
Pipelines	Y	–	N	–
Electrical grid (transmission cables)	Y	–	1	↑ (SeaLink undersea HVDC transmission cable)[28]
Ports	Y	–	N	–
LNG	N	–	N	–
Other (please specify)	N/A		N/A	N/A
Energy Facilities				
Oil and gas	Y	–	1	↑ (Proposed expansion of Sea3 terminal)[29]
Coal	N	–	N	–
Nuclear	1	–	N	–
Wind	N	–	1	↑ (UNH Offshore Wind Energy Test Facility at former Open Ocean Aquaculture Site)
Wave	N	–	1	↑ (UNH Offshore Wave Energy Extraction and Storage Test Facility at former Open Ocean Aquaculture Site)
Tidal	N	–	1	↑ (UNH Tidal Energy Testing Facility beneath General Sullivan Bridge)

[28] SeaLink is an electric transmission project intended to bring reliable electric service from the Seabrook nuclear power plant to northeastern Massachusetts. The project, as currently proposed, consists of a substation on the property of NextEra Seabrook nuclear power plant as well as a 520-megawatt high voltage direct current cable running underground through the towns of Seabrook, NH and Salisbury, MA and then offshore beneath the seafloor for approximately 55 miles to the Mystic substation in Everett, MA.

[29] Sea3 Inc. currently operates a propane terminal facility in the town of Newington, NH. Sea3 is proposing to expand its facility allowing it to receive additional propane shipments by rail. The additional rail cars will travel on PanAm's privately owned Portsmouth and Newington Railroad Branches, several miles of which are adjacent to the Great Bay Estuary.

Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	**Exists in CZ**		**Proposed in CZ**	
	(# or Y/N)	Change Since Last Assessment (↑, ↓, –, unknown)	(# or Y/N)	Change Since Last Assessment (↑, ↓, –, unknown)
Current (ocean, lake, river)	N	–	N	–
Hydropower	Y	–	N	–
OTEC	N	–	N	–
Solar	N	–	N	–
Biomass	1	–	N	–
Other (please specify)	N/A	N/A	N/A	N/A

2. If available, briefly list and summarize the results of any additional state or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater that local significance in the coastal zone since the last assessment.

   In 2012 the study entitled *The Economic Impact of the Piscataqua River and the Ports of Portsmouth and Newington* (Magnusson et al., 2012), was released. The study was sponsored by the Piscataqua River Economic Development Committee to better understand the economic impact of maritime commerce on the region. It describes the significant contribution to the regional economy in the states of New Hampshire and Maine by the Port of Portsmouth-Newington and the marine terminal operators along the Piscataqua River. Much of this economic contribution is in the form of energy products and services. The following are excerpts from the study:

   - In 2011, the principal commodity moved on the existing waterway was fossil-fuel based products (oil, propane, and coal) which comprise approximately 50 percent of the marine commerce shipped through the harbor by weight and 55 percent of its value.
   - A significant portion of the region's energy comes through the Port with fossil-fuel based cargo accounting for $0.9 billion in cargo value.
   - The amount of energy brought in through the Port is an estimated 60 trillion BTU – the equivalent to 20 percent of New Hampshire's total energy use and accounted for almost all of New Hampshire's distillate oil use.
   - In the summer of 2011, 33 wind turbines bound for the Granite Reliable Power Project in Coos County, NH were shipped and received at the Market Street terminal. [This] highlights that there is the opportunity for the Port to be involved in new technologies and that it can be involved in other aspects of the regional energy economy in addition to imports of fossil fuel energy sources.

   Five energy-related activities have been proposed in New Hampshire's coastal zone. Three of these are small scale energy testing projects (tidal, wave and wind) where prototypes utilizing emerging technologies will be temporarily deployed and evaluated. Both the wave and wind energy prototypes are proposed to be tested at the same site near the Isles of Shoals. None of the three proposed projects will involve permanent structures, nor will there be any commercial energy production. To date, neither the tidal energy project nor the wave/wind energy project has received all necessary state and federal approvals.

In 2014, the legislative Committee to Study Offshore Wind Energy and the Development of Other Ocean Power Technology, established by House Bill 1312 (Chapter 180, Laws of 2014), published its report on the feasibility of offshore energy production in New Hampshire. The key findings of the Committee indicated that while wave and tidal energy generation would not produce significant energy, offshore wind energy generation is feasible. The Committee recommends that the turbines be placed three or more miles off the shore of the Isle of Shoals, and be built on floating platforms attached to the sea floor due to the depth of the water in that area. Because this area is in federal waters managed by the Bureau of Ocean Energy Management and New Hampshire's coastline is relatively small, the Committee further recommends that New Hampshire work cooperatively with Maine and Massachusetts in the development of offshore wind energy.[30]

3. Briefly characterize the existing status and trends for Government facilities and activities of greater than local significance in the state's coastal zone since the last assessment.

   There have been no changes in the types or numbers of government facilities and activities of greater than local significance in the state's coastal zone since the last assessment.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if significant state or territory-level changes (positive or negative) that could facilitate or impede energy and Government facility siting and activities have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	N	N
State Comprehensive Siting Plans/Procedures	N	N	N

Note the report published by the Committee to Study Offshore Wind Energy and the Development of Other Ocean Power Technology described above.

2. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
   a. Describe the significance of the change; N/A
   b. Specify if it was a 309 or other CZM-driven change; and N/A
   c. Characterize the outcomes and/or likely future outcomes of the changes(s). N/A

   There have been no significant changes in the Energy and Government Facility Siting management categories since the last assessment.

[30] http://www.gencourt.state.nh.us/StatStudComm/committees/2151/documents/Offshore%20wind%20report.pdf.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	__X__
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   Given that there are no new energy production or transport facilities in New Hampshire's coastal zone since the last assessment, but that five new projects have been proposed, the Energy and Government Facility Siting enhancement area is rated as a Medium priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP.

Aquaculture

Section 309 Enhancement Objective: Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

PHASE I (HIGH-LEVEL) ASSESSMENT: *(Must be completed by all states and territories.)*
Purpose: To quickly determine whether or not aquaculture is a priority enhancement objective for the CMP that warrants a more in-depth assessment to understand key problems and opportunities that exist for program enhancement and the effectiveness of existing management efforts to address those problems.

Resource Characterization:

1. In the table below, characterize the existing status and trends of aquaculture facilities in the state's coastal zone based on the best available data. Your state Sea Grant Program may have information to help with this assessment.

Type of Facility/Activity	Status and Trends of Aquaculture Facilities and Activities[31]		
	# of Facilities	Approximate Economic Value	Change Since Last Assessment (↑, ↓, –, unkwn)
American Oyster – Bottom Culture	12	~$861,000 wholesale; $1.54-$3.69 million retail*	↑ (+10)
American Oyster – Upweller	2	Economic value is reflected in bottom culture estimate above	↑ (+2)
Blue Mussel – Open Ocean (long-line)	4	N/A	↑ (+1, licensed in 2014)
Sea Urchins – Bottom Culture	1	N/A	– (Facility licensed in 1998)
Steelhead Trout – Open Ocean/Riverine	1	N/A	↑ (+1, licensed in 2012)

* Range in retail values is due to variability in retail value to supermarkets ($1.25 - $1.50/oyster) versus restaurants ($2-$3/oyster)

2. If available, briefly list and summarize the results of any additional state or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment.

- *Overview of the Aquaculture Sector in New England* (Lapointe, 2013) - This NROC White Paper written by George Lapointe states, "The value of shellfish aquaculture in New England is between $45 and $50 million of dockside value at point of first sale…, with oysters being the most valuable product being raised." It also states, "The future growth potential for shellfish aquaculture in New England is significant. Current demand for high quality shellfish has resulted in a strong market for aquaculture shellfish." With regard to finfish aquaculture the White Paper states, "The finfish aquaculture sector in New England produces over 25 million pounds of fish, almost entirely Atlantic salmon, with a market value of over $73.5 million."
- *Aquaculture Situation and Outlook Report 2010: New Hampshire* (La Valley, 2010) - This Northeastern Regional Aquaculture Center publication (Publication No. 106-2010) written by Kenneth La Valley states, "New Hampshire has continued to increase aquaculture capacity through research, continued commercial activity and applied technology transfer activities. Most notably the Atlantic Marine Aquaculture Center, formally the UNH Open Ocean Aquaculture Program, has continued to build interest regionally in offshore long-line mussel culture through collaborations with New Hampshire Sea Grant and continued extramural funding acquired to transfer the technology to prospective producers along the New England coast." The publication also states that the most significant issue facing aquaculture in New Hampshire is the permitting process. Specifically, the publication states, "The most pressing need for marine aquaculture is a permitting process for conducting aquaculture in federal waters and a revamping of the process in state waters."

[31] Information in this table above was provided by the New Hampshire Fish and Game Department, the NHDES Shellfish Program, and Fat Dog Shellfish Co., LLC.

Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any state or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Aquaculture comprehensive siting plans or procedures	Y*	N	N
Other aquaculture statutes, regulations, policies, or case law interpreting these	Y**	N	Y

* NHF&G's *New Hampshire Marine Aquaculture Strategic Plan* (Dec. 1996; Revised Feb. 2012)
** Aquaculture statute (RSA 211.62-e) and Aquaculture Administrative Rules (Fis 807) administered by the New Hampshire Fish & Game Department; Fill and Dredge in Wetlands statue (RSA 482-A) administered by the NHDES Wetlands Bureau; and Shellfish Sanitation Statute (RSA 143:20-28) and Shellfish Sanitation Administrative Rules (He-P 2150.01 – 2150.37) administered by the Department of Health and Human Services.

2. For any management categories with significant changes briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

    a. Describe the significance of the change;
    b. Specify if it was a 309 or other CZM-drive change; and
    c. Characterize the outcomes and/or likely future outcomes of the changes(s).

    Two significant additions were made to the NHF&G's Aquaculture Administrative Rules (Fis 807) since the last assessment, both effective January 29, 2013. The first is a requirement that the locations of licensed marine bottom aquaculture operations inland of the General Sullivan Bridge be at least 150 feet apart. The second limits the size of any licensed bottom aquaculture site inland of the General Sullivan Bridge to no greater than 4.5 acres. These changes were necessitated by the significant increase in licensed commercial bottom culture oyster operations in the Great Bay Estuary in 2011 and 2012. The changes are an attempt by the NHF&G to spatially manage bottom culture aquaculture operations in the Great Bay Estuary in order to protect natural resources, minimize conflicts among existing licensed aquaculture operations, and minimize conflicts between existing licensed aquaculture operations and other users of the Great Bay Estuary. The changes to the Aquaculture Administrative Rules (Fis 807) were not the result of a 309 or other CZM-driven change.

    Of importance for significant future changes is an effort currently underway by the NHDES Wetlands Bureau to rewrite its administrative rules, Env-Wt 100-900. These rules also regulate marine aquaculture operations, and, as part of this effort, the Wetlands Bureau is coordinating with NHF&G to reduce duplication in NHF&G's aquaculture licensing and NHDES' aquaculture permitting processes. The goal is to ensure that future regulatory decisions regarding marine aquaculture

operations are scientifically-based and protect New Hampshire's sensitive and important natural resources while simplifying the licensing process.

Enhancement Area Prioritization:

1. What level of priority is the enhancement area for the coastal management program?

High	_____
Medium	__X__
Low	_____

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

   Given the significant growth in the commercial marine aquaculture industry since the last assessment, particularly in the American Oyster bottom culture sector, but because the industry is managed effectively via existing state regulations for commercial aquaculture by the combined work of NHF&G, NHDES Wetlands, and the New Hampshire Department of Health and Human Services, this enhancement area is rated as a Medium priority. This prioritization was confirmed at presentations to CAW and the management committee of PREP.

PHASE II (In-Depth) ASSESSMENTS

Wetlands

In-Depth Resource Characterization:
Purpose: To determine key problems and opportunities to improve the CMP's ability to protect, restore, and enhance wetlands.

1. What are the three most significant existing or emerging physical stressors or threats to wetlands within the coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone or specific areas that are most threatened? Stressors can be development/fill; hydrological alteration/channelization; erosion; pollution; invasive species; freshwater input; sea level rise/Great Lake level change; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

	Stressor/Threat	**Geographic Scope** (throughout coastal zone or specific areas most threatened)
Stressor 1	Development/Fill	Throughout
Stressor 2	Hydrological alteration	Throughout
Stressor 3	Sea Level Rise	Tidal (and adjacent) Wetlands

2. Briefly explain why these are currently the most significant stressors or threats to wetlands within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   The effects of development on wetland extent and integrity have been a concern for New Hampshire's Coastal Zone for many years. Both Rockingham and Strafford counties are the fastest growing counties in the State. With development come not only the direct effects to wetlands such as dredge or fill but also the indirect effects such as runoff from impervious surfaces that can alter the hydrological regime of wetlands. All three of these stressors were brought up at the CAW special meeting on Coastal Climate Resilience & the New Hampshire Coastal Program: the Next Five Years. In addition, the triennial PREP *State of Our Estuaries* reports, described more fully in the Phase I Wetlands section under Resource Characterization question #2, track changes to relative to both quantity and health of New Hampshire's coastal wetlands.

3. Are there emerging issues of concern but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Emerging Issue	**Information Needed**
Nutrient Enrichment of salt marsh	Need to better understand how to evaluate this phenomenon to determine whether it is happening in New Hampshire.
Green Crabs effect on salt marsh	Need additional research on European Green Crab population and habitat utilization in New Hampshire as well as the effect that they may have on salt marsh integrity.
Restoration/Management Techniques that increase resiliency tidal marsh from increased sea level rise	Regional information on successful marsh management techniques.

In-Depth Management Characterization:
Purpose: To determine the effectiveness of management efforts to address identified problems related to the wetlands enhancement objective.

1. For each additional wetland management category below that was not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

Management Category	Employed By State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Wetland assessment methodologies	Y	Y	N
Wetland mapping and GIS	Y	Y	Y
Watershed or special area management plans addressing wetlands	N	N	N
Wetland technical assistance, education, and outreach	Y	Y	N
Other (please specify)	N/A	N/A	N/A

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
    a. Describe significant changes since the last assessment;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

    The completion of revised a revised set of National Wetland Inventory (NWI) maps[5] was the most significant change to wetlands management in coastal New Hampshire since the last assessment. The updated NWI maps for the coastal zone provide excellent coverage for comparison of changing conditions. In addition, the new maps are instrumental to the Sea Level Affecting Marsh Model (SLAMM), the outputs of which will be critical to land acquisition and restoration planning. The development of the updated maps was not 309- or CZM-driven, but, as noted above, they will provide essential inputs to NHCP programs and projects.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in protecting, restoring, and enhancing coastal wetlands since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

    PREP's *State of Our Estuaries* reports are one mechanism for illustrating the effectiveness of New Hampshire salt marsh restoration efforts. These triennial reports, described more fully in the Phase I Wetlands section under Resource Characterization question #2, describe progress toward achieving PREP's goals. Another mechanism that evaluates effectiveness of the state's management efforts in

protecting and enhancing coastal wetlands are the PREPA reports (PREP 2015 and Sowers 2010), which are also described in the Phase I Wetlands and Cumulative and Secondary Impacts sections.

Identification of Priorities:

1. Considering changes in wetlands and wetland management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively respond to significant wetlands stressors. *(Approximately 1-3 sentences per management priority.)*

   Management Priority 1: Improve Buffer Management within the Coastal Zone

   Description: Buffers are undervalued for the services they provide for wildlife corridors, marsh transgression, water quality and flood attenuation. Emphasis will be given to assessing the existing condition of buffers and the protections they are provided at the State and municipal level. Possible outcomes of this management priority include improving buffer protections through regulation, enforcement, and voluntary adherence to recommended setbacks.

   Management Priority 2: Identify Opportunities for Restoration and Protection of Wetland Resources

   Description: There is recent interest from stakeholders (NHDES Aquatic Resource Mitigation Program, NROC) in identifying restoration/conservation opportunities to ensure technical and financial resources are allocated to high value projects. Evaluation criteria (e.g. wildlife habitat including eelgrass beds, water quality, hazard mitigation, response to sea level rise) will need to be developed through further stakeholder engagement to categorize restoration and protection opportunities.

   Management Priority 3: Provide technical assistance to the NHDES Wetlands Bureau with regard to revising regulatory framework for jurisdictional coastal resources

   Description: The NHDES Wetlands Bureau is currently implementing a multi-year process to revise wetland regulation to achieve environmental based outcomes and to improve regulatory processes. NHCP has already provided technical assistance in the form of recommendations for regulation of tidal culverts. Technical assistance to the Wetland Bureau will be ongoing.

   Management Priority 4: Assess tidal crossings to determine their impact to adjacent tidal wetlands under existing and future conditions

   Description: NHCP was instrumental in implementing a suite of tidal culvert replacements that resulted from a hydraulic assessment of New Hampshire's tidal culverts in 1992. Collective hydraulic assessment of all tidal culverts at a gross level will allow natural resource managers to be proactive when determining tidal volume necessary at a site level to sustain tidal marsh extent in the face of increasing sea level.

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Research on tidal marsh: nutrient enrichment, green crab effects, sea level rise effects, and sentinel monitoring[32] Research on eelgrass: Understanding causal effects of eelgrass decline and restoration potential
Mapping/GIS	Y	Buffers
Data and information management	Y	Continued support is needed for the Coastal Viewer
Training/capacity building	Y	Training for municipalities for importance of buffers and of tidal marsh.
Decision-support tools	N	N/A
Communication and outreach	Y	Communications plan for importance of buffers.
Other (Specify)	N/A	N/A

Enhancement Area Strategy Development:

1. Will the CMP develop one or more strategies for this enhancement area?
   Yes ___X__
   No _____

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

   Management, restoration, regulation, protection, and monitoring of wetlands are central to the mission of the NHDES Wetlands Bureau, as described in their "2011-2017 Wetland Program Plan." With the exception of direct regulation, NHCP shares similar priorities. In addition, both CAW and the PREP *Comprehensive Conservation and Management Plan* (2010) have similar 'highest' ranking priorities for wetlands. For these reasons, a strategy will be developed that provides tools to improve flushing through tidal culverts. A second strategy will provide technical assistance and outreach to coastal zone communities and state agencies through a coastal resilience program, with an emphasis on the impact to wetlands due to flooding and sea level rise.

Coastal Hazards

In-Depth Resource Characterization:
Purpose: To determine key problems and opportunities to improve the CMP's ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.

1a. **Flooding In-depth** (for all states besides territories): Using data from *NOAA's State of the Coast* "Population in the Floodplain" viewer[33] and summarized by coastal county through NOAA's Coastal

[32] http://oceanservice.noaa.gov/sentinelsites/pdf/Sentinel-Site-Program.pdf and http://www.neracoos.org/sites/neracoos.org/files/documents/Sentinel/Northeast_Sentinel_Monitoring_IOOC_CommunityWhitePaper_Rung_etal_2012.pdf.

County Snapshots for Flood Exposure,[34] indicate how many people at potentially elevated risk were located within the state's coastal floodplain as of 2010. These data only reflect two types of vulnerable populations. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available. *Note: National data are not available for territories. Territories can omit this question unless they have similar alternative data or include a brief qualitative narrative description as a substitute.*

2010 Populations in Coastal Counties at Potentially Elevated Risk to Coastal Flooding				
	Under 5 and Over 65 years old		In Poverty	
	# of people	% Under 5/Over 65	# of people	% in Poverty
Inside Floodplain	8,144	18%	3,166	6%
Outside Floodplain	65,179	17%	23,548	7%

1b. **Flooding In-depth** (for all states besides territories): Using summary data provided for critical facilities, derived from FEMA's HAZUS[35] and displayed by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,[34] indicate how many different establishments (businesses or employers) and critical facilities are located in the FEMA floodplain. You can provide more information or use graphs or other visuals to help illustrate or replace the table entirely if better information is available.

Critical Facilities in the FEMA Floodplain[34]						
	Schools	Police Stations	Fire Stations	Emergency Centers	Medical Facilities	Communication Towers
Inside Floodplain	6	3	2	0	0	1
Outside Floodplain in Coastal Counties	226	51	50	7	7	15

2. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards[36] within the coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone or are specific areas most at risk?

	Type of Hazard	Geographic Scope (throughout coastal zone or specific areas most threatened)
Hazard 1	Flooding	Primarily within the FEMA 1% and 0.2% annual chance floodplains
Hazard 2	Coastal storms*	Throughout coastal zone
Hazard 3	Sea level rise*	Shorelines within the coastal zone

* Riverine and coastal erosion are impacts that the New Hampshire Coastal Zone is experiencing associated with coastal storm surge and sea level rise. Efforts to prepare for coastal storms and sea level rise hazards will address multiple impacts, including erosion.

[33] http://stateofthecoast.noaa.gov/pop100yr/welcome.html.
[34] http://coast.noaa.gov/digitalcoast/tools/snapshots.
[35] http://www.fema.gov/hazus. Data can also be downloaded at NOAA STICS, http://www.csc.noaa.gov/digitalcoast/data/stics. Summary data on critical facilities for each coastal state is available on the ftp site.
[36] See list of coastal hazards at the beginning of the Phase I assessment.

3. Briefly explain why these are currently the most significant coastal hazards within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   - See the table of Other Coastal Hazards as well as the report descriptions (especially the *State Multi-Hazard Mitigation Plan)* in the *Coastal Hazards Phase I Assessment*.
   - See the description of the stakeholder meeting conducted with CAW in the *Coastal Hazards Phase I Assessment*.

4. Are there emerging issues of concern, but that lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Emerging Issue	Information Needed
Understanding risks from sea level rise combined with freshwater flooding	A methodology to assess the cumulative risk to coastal communities from freshwater riverine flooding and storm surge with sea level rise that would likely result from a major storm event
Planning for risk to culverts and tidal connectivity from sea level rise	A standard to evaluate and prioritize tidal culverts based on existing criteria and the compounded risks from sea level rise and tidal flooding
Evaluating saltwater intrusion risks	An evaluation of risk to public infrastructure from saltwater intrusion under different sea level rise scenarios
Understanding and planning for cumulative impacts of a population increase and coastal hazards, specifically climate-related risk	A build-out analysis for the Coastal Zone for 2025 and 2050 that can be integrated with sea level rise scenarios and combined with ecosystem services information

In-Depth Management Characterization:
Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.

1. For each coastal hazard management category below, indicate if the approach is employed by the state or territory and if there has been a significant change since the last assessment.

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Statutes, Regulations, and Policies:			
Shorefront setbacks/no build areas	Y	Y	Y
Rolling easements	N	N	N
Repair/rebuilding restrictions	Y	N	N
Hard shoreline protection structure restrictions	Y	N	N
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	Y	Y	Y
Repair/replacement of shore protection structure restrictions	Y	N	N

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Inlet management	N	N	N
Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	Y	Y	N
Repetitive flood loss policies (e.g., relocation, buyouts)	N	N	N
Freeboard requirements	N	N	N
Real estate sales disclosure requirements	Y	N	N
Restrictions on publicly funded infrastructure	N	N	N
Infrastructure protection (e.g., considering hazards in siting and design)	Y	Y	N
Other (please specify)			
Management Planning Programs or Initiatives:			
Hazard mitigation plans	Y	Y	Y
Sea level rise/Great Lake level change or climate change adaptation plans	Y	Y	Y
Statewide requirement for local post-disaster recovery planning	N	N	N
Sediment management plans	N	N	N
Beach nourishment plans	N	Y	N
Special Area Management Plans (that address hazards issues)	N	N	N
Managed retreat plans	N	N	N
Other (please specify): New Hampshire Coastal Risks & Hazards Commission establishment	Y	Y	Y
Other (please specify): Master Plan Climate Adaptation Chapters enabled	Y	Y	Y
Other (please specify): Fluvial erosion hazard zones	Y	Y	Y
Research, Mapping, and Education Programs or Initiatives:			
General hazards mapping or modeling	Y	Y	Y
Sea level rise mapping or modeling	Y	Y	Y
Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)	Y	Y	Y
Hazards education and outreach	Y	Y	Y
Other (please specify)			

2. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's management efforts in addressing coastal hazards since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's management efforts?

   No studies have been done assessing the state's effectiveness in addressing coastal hazards. A study on this topic would be useful—information to conduct an assessment is likely available, however the resources to conduct the study are lacking.

Identification of Priorities:

1. Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to more effectively address the most significant hazard risks. *(Approximately 1-3 sentences per management priority.)*

   Management Priority 1: Assist the New Hampshire Coastal Risk and Hazards Commission to finalize recommendations for reducing coastal risks and hazards and support implementation of the recommendations

   Description: The Commission is required to provide recommendations to the New Hampshire legislature by the end of 2016 about how to enhance resiliency of coastal communities and statewide assets to coastal risks and hazards exacerbated by climate change. Given that the Commission has limited staffing and no funding, NHCP plans to help staff their efforts and provide technical assistance as the Commission develops recommendations. NHCP will also assist with outreach associated with Commission meetings and reports and promote implementation of the final recommendations at state and local levels after the Commission completes its work.

   Management Priority 2: Assist all coastal zone communities and state agencies to complete vulnerability assessment processes that account for climate change impacts and identify next steps to prepare for coastal hazards

   Description: In order to achieve this priority action, NHCP plans to:
   - Expand the methodology used by the Rockingham Planning Commission Tides to Storms project and the NROC to engage and develop vulnerability assessments with the ten coastal communities within the coastal zone that have yet to participate in the process.
   - Take advantage of opportunities to assist the seven Atlantic Coast communities to implement actions they have identified as priorities within their coastal resiliency planning processes.
   - Provide technical assistance to the NHDES and other state agencies such as the Department of Transportation, the Department of Resources and Economic Development, the Office of Energy and Planning, the Division of Historical Resources, and the Department of Health and Human Services to conduct vulnerability assessments of state assets and implement identified measures to reduce coastal hazards.
   - Work with regional and local partners to leverage existing funding and establish new funding mechanisms that will support long-term technical assistance and implementation of projects to reduce coastal hazards (examples might include: municipal stormwater utilities that fund coastal hazard protection projects from revenues, state revolving fund, public-private partnerships).

   Management Priority 3: Develop and promote guidance to encourage best management practices for coastal infrastructure and land use, such as shoreline management techniques and culvert design, with the goals of protecting communities and natural resources and allowing for adaptation over time.

   Description: In order to achieve this priority action, NHCP plans to:
   - Promote the adoption of bridge and culvert design guidelines that accommodate increased

storm flows and tidal impacts due to climate change and sea level rise in addition to hydrologic connectivity and aquatic organism passage.
- Promote the adoption of shoreline protection guidelines that protect natural resources and implement priority actions identified at the 2014 Shoreline Management Conference.
- Encourage the adoption of Fluvial Erosion Hazard Ordinances and enhanced floodplain protection in coastal communities.

2. Identify and briefly explain priority needs and information gaps the CMP has for addressing the management priorities identified above. The needs and gaps identified here should not be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Priority Needs	**Need?** (Y or N)	**Brief Explanation of Need/Gap**
Research	Y	Research is needed related to the interaction between freshwater flooding, sea-level rise, and storm surge. More research is needed to understand saltwater intrusion risks. Ongoing research is needed to refine sea-level rise projections. Legal research is needed to understand the issues associated with living shorelines with regards to existing statutes and regulations.
Mapping/GIS/modeling	Y	A mapped shoreline habitat and structure inventory is needed in addition to a mapped assessment of shoreline vulnerability to identify options for shoreline treatment and management in specific areas. New mapping is needed to understand risks to infrastructure from sea-level rise as well as culvert connectivity under different sea-level rise scenarios. Modeling to demonstrate flood risks from the combination of freshwater and coastal flooding is also needed.
Data and information management	Y	Continued support is needed to maintain the Coastal Data Viewer and incorporate new data as it is developed. A centralized website is needed to serve as a Coastal Resilience Hub for all information related to CAW's work, the Coastal Viewer landing page and training tools, and other important information about coastal resilience and shoreline management in New Hampshire.
Training/Capacity-building	Y	Support is needed for NHCP, CAW, and regional planning commissions to expand training and capacity-building to municipalities for coastal resiliency and shoreline management planning and implementation. NHCP needs to develop training tools and opportunities for Coastal Viewer user audiences.
Decision-support tools	Y	Development of decision-support tools to assist communities and state agencies in determining appropriate culvert design guidelines and shoreline management strategies for specific areas under sea-level rise scenarios. Additional decision-support tools should be developed to encourage use of data on the Coastal Viewer.
Communication and outreach	Y	Communication and outreach support is needed for the Coastal Risk and Hazards Commission as it develops recommendations and communicates the associated products. Support is needed to NHCP, CAW, and regional planning commissions to expand outreach and education to municipalities about approaches to enhance coastal resiliency and improve shoreline management. NHCP needs to continue education and outreach related to the Coastal Viewer.
Other (Specify)	N/A	N/A

Enhancement Area Strategy Development:

1. Will the CMP develop one or more strategies for this enhancement area?
   Yes ___X__
   No _____

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

Given the increasing magnitude of storms and accelerating rates of sea level rise that are contributing to intensifying erosion along with more frequent and damaging flooding, habitat destruction, and resource damage, the Coastal Hazards enhancement area is rated as a High priority and NHCP intends to focus significant efforts to address these hazards in the next five years. Together with the development of accessible research and mapping tools, efforts have been made in the past five years to conduct education and outreach to coastal communities and state agencies about climate change effects on coastal hazards and possible actions to prepare for those hazards. In addition to sustained education and outreach and research and mapping efforts, the program would like to enhance training and technical assistance to empower others to develop plans and implement solutions over the course of the next five years. The New Hampshire Coastal Risk and Hazards Commission, a legislative study commission, will identify recommendations by the end of 2016 for communities and state agencies to address coastal hazards, suggesting that this topic is also a priority for the state legislature and other state agencies. The Commission's deadline provides NHCP with an ideal opportunity to influence statewide coastal policy and planning within the five-year timeframe. The development of a strategy for Coastal Hazards was supported by members of CAW and the management committee of PREP.

Cumulative and Secondary Impacts

In-Depth Resource Characterization:
Purpose: To determine key problems and opportunities to improve the CMP's ability to address cumulative and secondary impacts of coastal growth and development.

1. What are the three most significant existing or emerging cumulative and secondary stressors or threats within the coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone or are there specific areas that are most threatened? Stressors can be coastal development and impervious surfaces; polluted runoff; agriculture activities; forestry activities; shoreline modification; or other (please specify). Coastal resources and uses can be habitat (wetland or shoreline, etc.); water quality; public access; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

	Stressor/Threat	**Coastal Resource(s)/Use(s) Most Threatened**	**Geographic Scope** (throughout coastal zone or specific areas most threatened)
Stressor 1	Coastal development & impervious surfaces	Habitat (freshwater wetland & estuarine); Water quality	Throughout CZ
Stressor 2	Polluted runoff	Water quality; Habitat (estuarine)	Throughout CZ
Stressor 3	Flooding/sea level rise	Habitat (esp. shoreline); Water quality	Throughout CZ

2. Briefly explain why these are currently the most significant cumulative and secondary stressors or threats from coastal growth and development within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   Development continues to increase in the coastal zone (3.48 percent from 2006 to 2010) with a concurrent greater increase in impervious area (4.54 percent).[21] This increase is combined with housing growth of 0.96 percent from 2007 to 2012[37] during a period encompassing an economic recession. With the economy now improving, development pressure is already increasing, and will likely again outstrip population growth (population growth was slightly higher than housing growth from 2007 to 2012 at 1.01 percent, resulting in a slight decrease in land consumption per person). In addition, stressors 1 and 2 above, coastal development & impervious surfaces plus polluted runoff, have been identified as primary concerns in the PREP *Comprehensive Conservation and Management Plan* (2010). Growth and its secondary impacts have resulted in increased nutrient loading from both point and nonpoint sources, decreased water clarity, and reduced eelgrass habitat, among other effects. For example, despite some recent, localized increases in eelgrass, long-term statistics show a 38 percent decline in Great Bay eelgrass coverage between 1990 and 2011 along with an absence of eelgrass in the tidal rivers and a lack of connectivity between Great Bay and Portsmouth Harbor (PREP, 2013).

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Emerging Issue	Information Needed
Change in stream hydrology due to climate change, including resulting need for changes in floodplain management	Downscale climate change modeling to small stream level
How to better focus land conservation efforts to account for climate change impacts	Maps
Comprehensive water quality information for Great Bay, including new contaminants of concern	Coordinated water quality data and concentrations, especially for new concerns such as macro algae
Lack of integrated watershed management and permitting	Policy and regulatory support

In-Depth Management Characterization:
Purpose: To determine the effectiveness of management efforts to address identified problems related to the cumulative and secondary impacts enhancement objective.

1. For each additional cumulative and secondary impact management category below that is not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred since the last assessment.

[37] http://www.oceaneconomics.org/.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Methodologies for determining cumulative and secondary impacts (CSI) impacts	Y	Y	Y
CSI research, assessment, monitoring	Y	Y	N
CSI GIS mapping/database	Y	Y	N
CSI technical assistance, education and outreach	Y	Y	N
Other (please specify)	N/A	N/A	N/A

2. For management categories with significant changes since the last assessment, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information.
    a. Describe significant changes since the last assessment;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

    The *Great Bay Nitrogen Non-Point Source Study* (Trowbridge et al., 2014) utilized a customized version of the Nitrogen Loading Model originally published in Valiela et al. (1997) to determine the amount and sources of nitrogen pollution to the Great Bay, which had not previously been done at this level of detail. The model tracked nitrogen inputs from atmospheric deposition, chemical fertilizers, human waste through septic systems, and animal waste. Nitrogen from these sources was traced through surface waters, stormwater and groundwater, and model output matched field measurements of non-point source loads within the model uncertainty of +/-13 percent. Unique aspects of the New Hampshire model were the identification of animal wastes as a significant source of nitrogen, and the addition of a stormwater/surface water nitrogen transport pathway for the significant portion of nitrogen that would not enter groundwater. A summary of model results can be found in the Cumulative and Secondary Impacts Phase I section of this report, under Resource Characterization question number 5.

    This report was neither CZM-driven nor 309-funded, but CZM staff provided a significant amount of support. The expected outcome of this report was to identify the most significant sources of nitrogen pollution to the Great Bay by both source type and sub-watershed location in order to guide efficient pollution abatement projects.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in addressing cumulative and secondary impacts of development since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state and territory's management efforts?

    PREP's *State of Our Estuaries* reports, described in Phase I - Wetlands, Resource Characterization Question 2, are the primary vehicle for illustrating the effectiveness of New Hampshire's management efforts in addressing the cumulative and secondary impacts of development in the

Piscataqua watershed. The triennial reports describe progress toward achieving PREP's goals in areas such as limiting impervious surface, reducing nutrient loads to the estuary, restoring salt marshes, and conserving land and critical habitats in the watershed. Significant results from the most recent report, published in 2013, are described in the Wetlands Phase I section of this report. In addition to describing overall trends, the reports highlight projects successful at improving conditions as well as emerging issues and research priorities.

Identification of Priorities:

1. Considering changes in cumulative and secondary impact threats and management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve the effectiveness of its management effort to better assess, consider, and control the most significant threats from cumulative and secondary impacts of coastal growth and development. *(Approximately 1-3 sentences per management priority.)*

   Management Priority 1: Comprehensive Watershed-based Planning for Great Bay

   Description: Coordinate with NHDES Watershed Assistance Program to develop new, or update existing, sub-watershed plans for addressing NPS pollution to Great Bay which would also comply with EPA's Nine Minimum Elements of Watershed-Based Plans. With EPA elements "a," "b" and "i" already complete through the use of two existing reports and on-going monitoring done by PREP and GBNERR, NHCP will work with Watershed Assistance grantees to fill the c-h gaps. Plans will include evaluations of NPS hot spots and site specific identification of structural and non-structural approaches for reducing nitrogen loads, with expected products to incorporate pollutant hot spot analysis mapping, sub-watershed level identification of locations for site specific fixes and estimated load reductions, implementation strategies/schedule, and a description of costs and authorities for implementation.

   Management Priority 2: Reduce Non-point Source Nutrient Pollution from Sewer and Septic Systems

   Description: Cooperate with the NHDES Watershed Assistance Program to ensure that coastal region sewer and septic systems, especially those that are highly vulnerable to sea level rise and stormwater, are regulated, designed, installed and maintained in a way that allows them to function without degrading water quality. Objectives will include reduction of nitrogen and phosphorus pollution through maintenance and replacement of existing systems as well as development of alternative technologies and establishment of community systems. This effort will build on recent work conducted by the Strafford Regional Planning Commission to identify septic systems most at risk for NPS pollution due to the effects of climate change and on the research conducted by the Rockingham County Conservation District to determine the effectiveness of permeable reactive barriers for septic systems.

   Management Priority 3: Promote Municipal Planning that Reduces Cumulative and Secondary Impacts

   Description: Work with communities to identify and fill local needs with respect to achieving municipal goals for protecting water quality and coastal resources. NHCP staff will partner with

regional planning commissions, the NHDES Watershed Assistance Section, CAW and others to help communities adopt ordinances such as those to establish or expand buffer areas, to improve stormwater management, whether on a town-by-town basis or via a regional or multi-town stormwater utility, and to install and maintain green infrastructure and best management practices (BMPs).

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Priority Needs	**Need?** (Y or N)	**Brief Explanation of Need/Gap**
Research	Y	Better information about changes in stormwater impacts from climate change/precipitation changes. Studies to understand cost benefit analysis/economics.
Mapping/GIS	Y	Location and extent of buffers. Complete datasets to conduct detailed geospatial water resources analyses.
Data and information management	Y	Complete and update Coastal Viewer.
Training/Capacity building	Y	Technical support
Decision-support tools	Y	Conduct an economics and efficiency analysis to determine the effectiveness of various green infrastructure techniques and BMPs in NPS pollution control.
Communication and outreach	Y	Communities need additional resources and training in order to choose, install and maintain appropriate Low Impact Development techniques and BMPs that will effectively reduce NPS pollution.
Other (Specify): Local Regulations	Y	Determine existing municipal regulations affecting cumulative and secondary impacts such as buffer requirements, impervious surface limits and stormwater regulations, and then help towns develop and adopt effective, consistent regulations.

Enhancement Area Strategy Development:

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

   Yes __X___
   No _____

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

   The New Hampshire Coastal Region has been experiencing population and development growth greater than the average growth for the state as whole for the past several decades, and this trend is expected to continue for the foreseeable future. As a result, it is critical that coastal communities both reduce the cumulative and secondary impacts on coastal water quality and resources of past growth as well as plan ahead to minimize the secondary effects of future development. Thus the three management priorities above focus on determining how and where past development has affected New Hampshire's coastal region, reducing these effects, and developing ordinances and

partnerships to reduce or eliminate future effects. The critical nature of these impacts have already been recognized by NHCP's partner organizations in the coastal region and in the state: these management priorities have been identified as highest priority actions in the PREP *Comprehensive Conservation and Management Plan* (2010), as critical goals in the PREP *State of Our Estuaries Report* (2013), as important objectives for the next five years in the *New Hampshire Nonpoint Source Management Program Plan* (NHDES, 2014), and as top emerging priorities by CAW.

STRATEGIES

1. Tidal Culverts

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(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. Strategy Description

A. The proposed strategy will lead to, or implement, the following types 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. ***Strategy Goal:*** The goal of this strategy is to improve design and permitting outcomes of the replacement and/or construction of new road crossings in tidal environments in New Hampshire's Coastal Zone through non-regulatory approaches.

C. ***Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above.***

NHCP plans to achieve this strategy by conducting in-depth field assessments of tidal crossings in New Hampshire's Coastal Zone followed by evaluating field data to determine whether road crossings are restrictive of existing and predicted tide elevations. This approach will achieve program change by providing guidelines in the form of environmental targets and hydrological needs for selected tidal areas. This will allow engineers and permitting agencies to have a standard upon which to measure suitability of a proposed action for the site in question.

III. Needs and Gaps Addressed

In May 2010, NHDES promulgated administrative rules (Env-Wt 900) which established standards for all crossings of perennial and intermittent streams. These rules revised the manner in which culverts and bridges are designed in New Hampshire. The purpose of this rule change was to ensure that stream crossing structures in New Hampshire are designed to accommodate flood flows, geomorphic processes and aquatic organism passage. Env-Wt 900 does not specifically address stream crossings affected by tidal hydrology because their complexity prevented development of standards at the time that Env-Wt 900 was promulgated. To date, permitting of tidal stream crossings by NHDES has been on a case-by-case basis, which is consistent with approaches by other New England states. While there are general targets that NHDES regulatory personnel utilize to inform regulatory decisions for tidal crossings, there remains no formal guidance or requirements for design considerations, data inputs, or design outcomes of proposed tidal stream crossing projects.

In the absence of any guiding doctrine or policy, individual tidal stream crossing projects may achieve varying outcomes. Incorporating tidal criteria into New Hampshire's Stream Crossing Rules was a component of New Hampshire's *2011 Section 309 Assessment and Strategy*.[Error! Bookmark not defined.] While a program change for tidal culverts wasn't achieved, the concept was evaluated and a rule change was considered; however, the issue was deemed a lower priority as compared to other needs of the NHDES Wetlands Bureau.

Our 2016 strategy approaches the same issue from a different direction by providing non-regulatory guidance for tidal culvert replacement projects in the form of establishing environmental targets for tidal systems and, potentially, guidance for designers, permitters, and local decision makers.

IV. Benefits to Coastal Management

Although few in number, tidal stream crossings have a considerable impact on the ecological integrity of existing salt marsh as well as on the processes that will, under climate change scenarios, maintain and accommodate salt marshes in the future. Improved design and permitting will ensure that tidal processes are sustained to the greatest extent.

V. Likelihood of Success

The strategy will begin in June 2015 through a contract between NHCP and The Nature Conservancy (TNC). TNC is contracted to implement a process to convene regional experts to provide guidance on what should be included in the tidal culvert assessment protocol. Their work will also evaluate any assessment protocol examples from around the country. The outcome of the work will be a draft assessment protocol that will be piloted at several locations. This work will be complete by July 1, 2016. Completion of subsequent activities for this strategy is dependent upon outside funding. However, NHCP is confident that we will be able to successfully recruit outside funding to achieve this goal. In addition, this strategy is designed incrementally such that goals can still be partially achieved with reduced project funding by assessing high priority sites.

VI. Strategy Work Plan

Strategy Goal: Improve design and permitting outcomes of tidal culvert replacement projects through non-regulatory approaches

Total Years: **5**

Total Budget: $60,000

Year(s): 1-2
Description of activities: Convene regional experts in hydrology, ecology, and transportation to develop a tidal culvert assessment protocol to characterize the culvert and surrounding area.
Major Milestone(s):
- 1workshop.
- Draft Tidal Culvert Assessment Protocol.

Budget: $15,000

Year(s): 2-3
Description of activities:
- Utilize Sea Level Affecting Marshes Model (SLAMM) to prioritize which stream crossings should to be evaluated in the field.
- Assess selected tidal culverts using the approved assessment protocol.

Major Milestone(s):
- Field work completion.
- Database of field data.

Budget: $10,000

Year(s): 3-4
Description of activities:
- Hire a contractor or join with technical partner to conduct Hydrological and Hydraulic analysis of selected tidal systems affected by road crossings.
- Develop a report indicating how well each crossing is able to pass a representative tide under existing and future conditions.
- Establish environmental targets for selected tidal systems.

Major Milestone(s):
- Draft report.
- Final report.

Budget: $30,000

Year(s): 5
Description of activities:
- Share the results of the study with NHDES Wetlands Bureau, Department of Transportation, municipalities and other project partners.
- Integrate findings into the coastal viewer.

Major Milestone(s): Workshop to share findings**.**
Budget: $5,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

Appropriate management of tidal resources adjacent to road crossings is critical for the maintenance of tidal marsh under sea level rise scenarios. The science behind this issue is

extremely complex; therefore, outside funding is required to implement this program to its capacity.

B. Technical Needs:

NHCP possesses the technical skills and knowledge lead this strategy, however, additional capacity from local partners and technical resources are necessary.

VIII. Projects of Special Merit (Optional)

Another approach for creating significant program change with regard to management of tidal wetlands is to create best management practices for replacement or construction of tidal stream crossings. A guidance document for tidal culverts would be timely given the predicted impacts of sea level rise on the extent of tidal wetlands throughout the Northeast. SLAMM model outputs indicate that future high marsh will be constrained to locations landward of road crossings. With this in mind, it is critical to provide municipalities, natural resource managers, engineers, and transportation agencies better guidance on this issue.

2. New Hampshire Coastal Risks & Hazards Commission

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(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. Strategy Description

A. The proposed strategy will lead to, or implement, the following types 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. ***Strategy Goal:*** To support development of the recommendations of the legislative New Hampshire Coastal Risks and Hazards Commission and assist with communication and outreach about the effort and draft recommendations.

C. ***Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above.***

The New Hampshire Coastal Risks and Hazards Commission (Commission) was established by state legislation July 2, 2013. By December 1, 2016, the Commission is required to summarize the best available science about climate change impacts to coastal New Hampshire and "recommend legislation, rules, and other actions to prepare for projected sea-level rise and other coastal and coastal watershed hazards such as storms, increased river flooding, and storm water runoff, and the risks such hazards pose to municipalities and state assets in New Hampshire." NHCP staff members have been assisting with the Commission process as schedules have permitted, however the new Coastal Resilience Specialist's work plan will include a specific task to support the Commission as it completes its work. The Coastal Program Manager will also continue to serve an advisory role on the Commission Steering Committee and in the State Working Group. The Coastal Resilience Specialist will:

- Attend meetings of the full Commission as well as the Coastal, Inland, and State working groups.
- Give presentations as needed.
- Provide research and writing capacity.
- Provide technical assistance.
- Manage the Commission website.
- Work with CAW to develop a communication strategy for the Commission as well as a series of workshops that will relay the latest science, draft recommendations, and seek input from community members.

The Commission recommendations are specifically intended to inform and create new legislation, policies, guidance and practices associated with coastal hazards. The Commission's work represents the best opportunity for achieving large-scale program change in the form of better management of coastal hazards in New Hampshire at both state and local levels. In order to ensure that the Commission completes its work in an effective, well-informed and timely manner, staff assistance from NHCP is critical. Following the release of the Commission recommendations at the end of 2016, NHCP will amend the 309 Strategy to better reflect the specific program changes to be targeted for 2017 through 2020.

III. Needs and Gaps Addressed

NHCP expects that the Commission recommendations, once finalized, will address many of the needs identified by the 309 Assessment. In the meantime, this strategy will assist with the critical need for communication and outreach support for the New Hampshire Coastal Risk and Hazards Commission as it develops recommendations and communicates the associated products. This strategy will also help achieve identified research needs by incorporating those needs into recommendation language for the Commission. Some of these research needs include: 1) a better understanding of the interaction between freshwater flooding, sea-level rise, and storm surge; 2) saltwater intrusion risks; and, 3) refined sea-level rise projections.

IV. Benefits to Coastal Management

This strategy will benefit coastal management by ensuring that good coastal management strategies are incorporated into the recommendations of a state-level legislative committee. The likelihood of achieving these strategies will be significantly higher if sanctioned by the Commission. This strategy will be amended to provide more specific examples when the recommendations are published at the end of 2016.

V. Likelihood of Success

The likelihood of success of this strategy is high. NHCP staff members have already been engaged in the Commission process. New staff resources provided by the Coastal Resilience Specialist will ensure that NHCP can provide the level of technical assistance and outreach support needed to make the Commission's recommendations useful and aligned with best practices for coastal management. CAW and the Commission itself have both expressed the need for more staff and communications support to the Commission, and the Commission has accepted that NHCP is the appropriate program to provide that support.

VI. Strategy Work Plan

Strategy Goal: To support development of the recommendations of the legislative New Hampshire Coastal Risks and Hazards Commission, assist with communication and outreach about the effort, and draft recommendations.

Total Years: **3**

Total Budget: **$40,000**

Year(s): 1-2

Description of activities: Support the work of the New Hampshire Coastal Risks and Hazards Commission and participate in the development of recommendations.

Major Milestone(s):

- Attend monthly Commission, steering committee and working group meetings.
- Give presentations, as needed.
- Provide research, writing and other technical assistance as recommendations are developed.
- Update Commission website, as needed.

Budget: **$15,000**

Year(s): 1-3

Description of activities: Work with CAW to develop a communication strategy for the Commission as well as communication tools and a series of workshops that will relay the latest science, draft recommendations, and seek input from community members.

Major Milestone(s):

- Draft Commission communications strategy, in partnership with CAW, and approved by Commission.
- Develop communication tools, including at least one two-page fact sheet and a canned Power Point presentation.
- Public workshop organized and executed, in partnership with CAW, to inform about the Commission Science Report.
- Organize and execute at least three public workshops (coastal, inland and state), in partnership with CAW, to communicate CRHC recommendations and obtain community input.

Budget: **$25,000**

VII. Fiscal and Technical Needs

A. Fiscal Needs:

Additional funds are needed to design communication tools for the Commission's science report and other products. CAW has secured funding to fill some of these needs.

B. Technical Needs:

NHCP possesses the technical skills and knowledge to carry out this strategy, however, additional capacity from CAW will be needed and has been arranged.

VIII. Projects of Special Merit (Optional)

None

3. Coastal Resilience Technical Assistance Program

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(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. Strategy Description

A. The proposed strategy will lead to, or implement, the following types 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. ***Strategy Goal:*** To develop a coastal resilience program with a dedicated NHCP staff person that provides technical assistance and outreach to coastal zone communities and state agencies, resulting in plans and policies that better address the coastal risks and hazards that are exacerbated by climate change in New Hampshire.

C. ***Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above.***

The Coastal Resilience Technical Assistance Program will provide a central source for assessments and information, technical assistance, community outreach, and coordination for reducing coastal risks and hazards in New Hampshire. The new Coastal Resilience Specialist within NHCP will coordinate the program, bringing together the combined resources and knowledge of CAW members, NHCP staff, and other local, state and federal sources to provide assistance and training to communities and state agencies, support the New Hampshire Coastal Risks and Hazards Commission as it develops recommendations, and administer coastal resilience grant projects.

The work plan tasks described below are designed to provide tools and resources that will achieve key programmatic changes at a variety of levels. Through community-based vulnerability assessments and wetland buffer outreach, municipal plans and ordinances will be created or

updated to improve local floodplain management and buffer protection. A state-level assessment of vulnerable coastal assets will result in better-protected state resources through the implementation of guidance and new administrative decisions (for example: improvements to how state-owned roads are built, managed and repaired in areas of high flood risk). A new coastal resilience hub will more effectively disseminate tools and guidance that help communities and state-level decision-makers reduce coastal hazards through a variety of mechanisms, including new policies and planning. Finally, successful implementation of the New Hampshire Coastal Risks and Hazards Commission recommendations will result in guidance as well as new statutes, regulations, enforceable policies, administrative decisions, executive orders, and/or memoranda of agreement/understanding that enhance state and local resilience to coastal hazards. NHCP plans to amend the 309 Strategy to include more detailed implementation strategies for the New Hampshire Coastal Risks and Hazards Commission recommendations when they are published in 2016. Ultimately, all of these implementation strategies will form components of the new NHCP coastal resilience program led by the Coastal Resilience Specialist, which represents a key programmatic change for NHCP and NHDES.

III. Needs and Gaps Addressed

This Assessment has identified several priority needs that will be addressed by this strategy including GIS mapping, data and information management, training and capacity-building, and communication and outreach. By developing new vulnerability assessments for 10 coastal communities and state assets, this strategy seeks to fill the need for new mapping to understand risks to infrastructure from sea level rise and storms. By developing a web-based coastal resilience hub, this strategy seeks to fill the need for a centralized platform that organizes, consolidates, and disseminates information about resilience efforts and tools focused in the Coastal Zone. By expanding the application of the 'Preparing for Climate Change' workshop series and enhancing education about wetland buffer protection, this strategy seeks to fill the identified need for additional capacity-building, communication, and outreach. The recommendations of the New Hampshire Coastal Risks and Hazards Commission will identify some needs and gaps that overlap with those identified by this Assessment as well as additional needs and gaps. An amended 309 Strategy will be submitted when those recommendations are published.

IV. Benefits to Coastal Management

The strategy will benefit coastal management in New Hampshire in several tangible ways. This strategy ensures that coastal resilience program work is *institutionalized* within NHCP and NHDES in the form of a full-time staff person and their work plan. As a result, projects and resources will continue to be directed at reducing coastal risks and hazards for the long-term. The strategy will allow NHCP to fill several information gaps that communities and state agencies have identified as impediments to progress on reducing coastal hazards. Ultimately, this strategy will result in communities, state agencies and resources that are better prepared for and more resilient to the impacts of climate change along the New Hampshire Coastal Zone.

V. Likelihood of Success

The strategy has a high likelihood of success, given the availability of new NHCP resources through the full-time Coastal Resilience Specialist and existing support from CAW. CAW participated in a focus group session to help develop this strategy. Additionally CAW will play an important role in carrying out some of the activities identified in this strategy, such as the 'Preparing for Climate Change' workshops and the wetland buffer education. In addition, the New Hampshire Coastal Risks and Hazards Commission is a State Legislative Committee with strong support from the Governor's

Office and state legislators. Through the outreach and communication efforts outlined in this strategy (e.g. workshops and website), NHCP will expand support for work on coastal resiliency issues and for the implementation of the New Hampshire Coastal Risks and Hazards Commission recommendations.

VI. Strategy Work Plan

Strategy Goal: To develop a coastal resilience program with a dedicated NHCP staff person that provides technical assistance and outreach to coastal zone communities and state agencies, resulting in plans and policies that better address the coastal risks and hazards that are exacerbated by climate change in New Hampshire.

Total Years: **5**

Total Budget: **$180,000**

Year(s): 1-5

Description of activities: Engage additional Coastal Zone communities in the 'Preparing for Climate Change' workshop series to build capacity among local leaders and encourage the development of community resilience action plans.

Major Milestone(s):

- Contract with the Natural Resources Outreach Coalition to complete at least three additional 'Preparing for Climate Change' workshop series.
- Assist with facilitation and outreach for the workshop series.
- Complete draft action plans or set of action steps as identified by municipal participants.
- Complete workshop series.

Budget **$20,000**

Year(s): 1-3

Description of activities: Improve education and outreach about wetland buffer protection, including developing outreach materials and organizing a 'Water, Weather, Climate and Community' workshop.

Major Milestone(s):

- Develop and disseminate outreach materials related to municipal wetland buffer protection, in partnership with PREP.
- Hold workshop, in partnership with CAW, focused on buffer protection as a tool to prepare for climate change impacts.

Budget **$10,000**

Year(s): 1-4

Description of activities: Improve community education and engage in projects focused on using green stormwater infrastructure as a tool to enhance flood protection and water quality as climate change exacerbates both issues, and explore opportunities to implement municipal stormwater utilities as a method for raising local revenue for floodplain management.

Major Milestone(s):

- Conduct education in at least two municipalities related to green infrastructure and climate change.
- Complete at least two projects that result in the design of green infrastructure to accommodate increased precipitation levels related to climate change.
- Following the issuance of the MS4 EPA permits, participate in discussions with NHDES 319 program and at least one municipality related to stormwater utility development.

Budget **$10,000**

Year(s): 1-5

Description of activities: Complete vulnerability assessments for the remaining 10 coastal zone communities using an approach similar to the Tides to Storms project which has focused on the seven Atlantic coastal communities. Information from these assessments will ultimately be incorporated into local Master Plans and/or Hazard Mitigation Plans.

Major Milestone(s):

- Develop work plan and contracts for vulnerability assessments with Regional Planning Commissions.
- Complete vulnerability assessments.
- Complete model Hazard Mitigation Plan chapter based on assessments for incorporation by municipalities.

Budget **$60,000**

Year(s): 1-5

Description of activities: Complete a vulnerability assessment of state-owned assets in the Coastal Zone and develop recommendations to better prepare the state's assets for climate change impacts.

Major Milestone(s):

- Collaborate with relevant state agencies.
- Develop a work plan for the assessment.
- Complete the assessment.
- Develop recommendations.
- Publish and conduct outreach.

Budget: **$30,000**

Year(s): 1-3

Description of activities: Lead the development of a new CAW website to serve as a 'coastal resiliency hub' where community members can engage with each other, access the Coastal Data Viewer and associated training tools along with additional assessment tools and guidance, explore shoreline management options, and find information about the New Hampshire Coastal Risks and Hazards Commission.

Major Milestone(s):

- Contract CAW 'resiliency hub' website.
- Approve design.
- Launch website.

Budget: **$30,000**

Year(s): 2-5

Description of activities: Implement the New Hampshire Coastal Risks and Hazards Commission recommendations, to be published by December 2016.

Major Milestone(s): Priority recommendations from the New Hampshire Coastal Risks and Hazards Commission are implemented. More specific milestones will be determined upon publication of the final recommendations.

Budget: $20,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

309 funds are not sufficient to complete several elements of this strategy. First, NHCP will rely on partnerships with CAW, PREP, NROC, the Strafford Regional Planning Commission, the Rockingham Regional Planning Commission, other NHDES programs, and other state agencies to complete many of the identified activities. Additional funding will be needed to complete the 'Preparing for Climate Change' workshop series, the vulnerability assessments for 10 coastal communities, the green infrastructure projects, and the CAW 'coastal resiliency hub' website.

In FY2014, NHCP, in partnership with the Regional Planning Commissions, applied for a NOAA Project of Special Merit (PSM) in support of goals expressed in the 2011 Section 309 Assessment and Strategy to obtain funding for the 10 coastal-inland community vulnerability assessments. NHCP expects to be able to fund other components of the strategy through additional grant opportunities and partnership agreements. If received, this PSM will serve to bridge the implementation of the 2011 Section 309 Assessment with the 2016 Section 309 Assessment.

B. Technical Needs:

NHCP does not have the expertise to carry out several components of the strategy, including 'coastal resiliency hub' website design, the state and local vulnerability assessments, and the 'Preparing for Climate Change' workshops. However, existing partnerships will be leveraged to achieve these activities, as identified in the Major Milestones above. The Regional Planning Commissions have partnered with NHCP on a NOAA Project of Special Merit application to complete the community vulnerability assessments.

VIII. Projects of Special Merit (Optional)

- Contract the development of a new CAW website to serve as a 'coastal resiliency hub' where community members can engage with each other, access the Coastal Data Viewer along with additional survey tools and guidance, and find information about the New Hampshire Coastal Risks and Hazards Commission.
- Contract new 'Preparing for Climate Change' workshop series with NROC.

4. Advancing Shoreline Management

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(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. Strategy Description

A. The proposed strategy will lead to, or implement, the following types 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. ***Strategy Goal:*** To develop and provide guidance for shoreline protection strategies that consider climate change impacts and protect ecosystem services, including natural flood protection and habitat, and identify potential demonstration sites for living or soft shorelines.

C. ***Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above.***

In December 2014, over 100 members of the New Hampshire coastal management community began a dialogue about the future of shoreline management in the state at the New Hampshire Shoreline Management Conference. With assistance from experts in other states, members of the NHCP and partner organizations began to develop a work plan to advance resilient shoreline management strategies in New Hampshire. That dialogue informed this strategy, which is composed of the following strategy activities:

- Publish a white paper that assesses existing regulatory issues related to living shorelines in New Hampshire, including permitting and public trust issues as well as the potential for regulatory changes.
- Complete spatial inventory of existing shoreline structures and natural shorelines in the Coastal Zone.

- Conduct an assessment of shoreline vulnerability to erosion and sea level rise, and a suitability analysis for living shoreline management approaches, using the shoreline inventory and other available data.
- Publish guidance for shoreline management strategies directed at municipal officials, permitters and developers, and conduct education workshops about the guidelines.

Interest in natural and hybrid shoreline management strategies is expanding nationwide, and NHCP recognizes the multitude of benefits to be gained from using approaches that protect built infrastructure, safety and natural resources. No comprehensive inventory of current shoreline structures exists and no targeted approach to evaluate potential for living shorelines has been conducted at the state level. This strategy will create a new body of knowledge in New Hampshire and will ultimately lead to new guidelines sanctioned by the state. This strategy may also lead to new legislation, depending on the findings of the white paper.

III. Needs and Gaps Addressed

This strategy addresses several needs identified in this Assessment, including: 1) the need for research on the legal issues associated with living shoreline projects;2) mapping of existing shoreline structures and shoreline vulnerability; 3) the development of a tool to identify appropriate shoreline management strategies; and, 4) the need for education and outreach focused on improved shoreline management strategies.

IV. Benefits to Coastal Management

This strategy will benefit coastal management by clarifying existing regulations about shoreline management and identifying what is allowable for living shoreline projects. This strategy will also ultimately identify opportunities for shoreline management strategies that benefit both communities and natural resources, and allow for better understanding and protection against the impacts of sea level rise.

V. Likelihood of Success

Given the interest in this issue shown at the Shoreline Management Conference, this strategy has a high likelihood of success. CAW and its partner organizations have shown support for this strategy, as has the New Hampshire Coastal Risks and Hazards Commission.

VI. Strategy Work Plan

Strategy Goal: To provide guidance for shoreline protection strategies that consider climate change impacts and protect ecosystem services, including natural flood protection and habitat, and identify potential demonstration sites for living or soft shorelines.

Total Years: **5**

Total Budget: **$65,000**

Year(s): 1

Description of activities: Publish a white paper that assesses existing regulatory issues related to living shorelines in New Hampshire, including permitting and public trust issues as well as the potential for regulatory change.

Major Milestone(s):

- Draft white paper and submit for comments.
- NHDES-approved white paper.

Budget: $7,500

Year(s): 1

Description of activities: Complete spatial inventory of existing shoreline structures and natural shorelines in the Coastal Zone.

Major Milestone(s):

- Publish the shoreline inventory on the New Hampshire Coastal Viewer.

Budget: $12,500

Year(s): 2-4

Description of activities: Conduct an assessment of shoreline vulnerability to erosion and sea level rise as well as a suitability analysis for living shoreline management approaches using the shoreline inventory and other available data.

Major Milestone(s):

- Completed review of shoreline vulnerability assessment methods and living shoreline suitability analyses employed by other states.
- Establish advisory team to complete shoreline vulnerability assessment and suitability analysis.
- Establish methodology for shoreline vulnerability assessment and suitability analysis.
- Complete and publish shoreline vulnerability assessment and suitability analysis on the New Hampshire Coastal Viewer.

Budget $20,000

Year(s): 3-5

Description of activities: Publish guidance for shoreline management strategies directed at municipal officials, permitters and developers, and conduct education workshops about the guidelines.

Major Milestone(s):

- Assemble advisory team to develop guidance.
- Draft and review guidance for shoreline management strategies.
- Publish guidance.
- Hold at least three workshops/outreach events to disseminate and train target audiences on the guidance.

Budget $25,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

Funding is needed for a NHCP intern to conduct the shoreline inventory – this funding will be budgeted for Year 2 of the strategy. Additional funding may be needed to complete the vulnerability assessment and suitability analysis.

B. Technical Needs:

NHCP will establish an advisory team at NHDES and external partner organizations to provide the technical and regulatory expertise needed to achieve this strategy.

VIII. Projects of Special Merit (Optional)

- Design, construction and monitoring of a living shoreline project to serve as a demonstration site.
- Develop a tool that identifies suitability of specific locations in the Coastal Zone for different shoreline management strategies and identifies potential pilot locations for living shoreline projects.

5. Development of 309 Assessment and Strategy

I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(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. Strategy Description

A. The proposed strategy will lead to, or implement, the following types 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. ***Strategy Goal:*** To develop the next 309 Assessment and Strategy, including identification of new emerging issues for coastal management.

C. ***Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above.***

Development of the next 309 Assessment and Strategy in 2020 will assess progress on the known issues identified in this report, develop more information and interest in those issues, and identify additional issues for future strategy updates. New coastal management concerns will be identified and prioritized in cooperation with NHCP partners including CAW, PREP, NHDES, the Gulf of Maine Council, and NROC, as well as through attendance at regional meetings and conferences. Once top management priorities have been agreed on, NHCP will work with its coastal partners to address these issues and create program change. NHCP staff will review the Assessment annually to ensure that progress is being made toward achieving program goals.

III. Needs and Gaps Addressed

New coastal management needs are constantly coming to light as science, policy and environmental threats change, and known management priorities change frequently as some problems are solved and others take on increased importance. The five year assessment provides an opportunity to

reflect on NHCP's progress and determine where future efforts will have the greatest impact on New Hampshire's most significant coastal concerns.

IV. Benefits to Coastal Management

The process of gathering information to complete the 309 Assessment and Strategy report will allow NHCP 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. The 309 Assessment and Strategy process has helped build many of the partnerships that assist NHCP staff not only identify issues but also build the support necessary to achieve program changes. Other state agencies and communities have come to depend on the NHCP to participate in planning efforts and to provide coordination.

VI. Strategy Work Plan

Strategy Goal: An updated Section 309 Strategy and Assessment report along with the benefits of coordination and information transfer among NHCP partners that result from the identification of coastal management priorities.

Total Years: **5**

Total Budget: **$30,000**

Year(s): 1-4
Description of activities:

- Track progress on tasks and strategies, develop annual work plan and revise strategies as necessary.
- Participate in conferences, workshops, CAW meetings, Gulf of Maine Council events, etc. to identify issues and needed partners for 309 program changes.

Major Milestone(s): Annual work plans submitted.
Budget: **$10,000**

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

- Identify emerging issues and coastal management priorities during one or more workshops or meetings with NHCP partners, as well as through informal interviews with NHCP partners and stakeholders.
- Reassess the *2016 Section 309 Assessment and Strategy* document.
- Develop new 309 strategies.
- Develop a *2021 Section 309 Assessment and Strategy* draft document.
- Post the *2021 Section 309 Assessment and Strategy* draft document for public review.
- Finalize the *2021 Section 309 Assessment and Strategy* report and submit to OCRM for review.

Major Milestone(s):

- Management priority setting meetings held with NHCP partners and stakeholders.
- *2021 Section 309 Assessment and Strategy* document submitted.

Budget: **$20,000**

VII. Fiscal and Technical Needs

A. Fiscal Needs:

NHCP utilized a portion of an employee's time from another section within the NHDES Watershed Management Bureau to create this current assessment. This methodology works well as it brings in an environmental professional familiar with general water issues in New Hampshire, but who is not part of the NHCP, for an objective assessment.

B. Technical Needs:

NHCP has most of the technical skills necessary to complete most of this strategy, and can draw on the knowledge of its partners and other NHDES staff to answer any other technical questions.

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**
Tidal Culverts	$5,000	$15,000	$17,500	$17,500	$5,000	$60,000
New Hampshire Coastal Risks and Hazards Commission	$10,000	$10,000	$20,000	$0	$0	$40,000
Coastal Resilience Technical Assistance Program	$47,500	$37,500	$17,500	$40,000	$37,500	$180,000
Advancing Shoreline Management	$10,000	$10,000	$15,000	$15,000	$15,000	$65,000
Development of 309 Strategy	$2,500	$2,500	$5,000	$2,500	$17,500	$30,000
Total Funding	$75,000	$75,000	$75,000	$75,000	$75,000	$375,000

SUMMARY OF STAKEHOLDER/PUBLIC COMMENT

Identification of emerging and critical issues, management priorities and strategies for this report were developed through a comprehensive planning process by NHCP staff during the summer and fall of 2014 in cooperation with NHCP partners and stakeholders. NHCP staff conducted multiple informal interviews with NHDES colleagues to determine the priorities of other programs, major gaps in knowledge or resources, and where NHCP could most effectively work in cooperation with these programs to accomplish mutual goals. For example, discussions with the NHDES Watershed Assistance Section resulted in the development of Cumulative and Secondary Impact Management Priorities #1 and #2. Similarly, Wetlands Management Priorities #1, #2 and #3 were developed in consultation with the NHDES Wetlands Bureau. Partners also provided valuable input to many other sections of this report, such as the marine debris data and significance of various debris types supplied by Jen Kennedy, Executive Director of the Blue Ocean Society for Marine Conservation.

More formally, stakeholders and partners were also involved in the 309 assessment process through facilitated input sessions. The enhancement area prioritization was guided and supported by members of CAW and the management committee of PREP. PREP and CAW include representatives from the UNH Institute for Earth, Oceans and Space; NHF&G-Great Bay National Estuarine Research Reserve; N.H. Sea Grant; UNH Jackson Estuarine Laboratory; Rockingham Regional Planning Commission; Strafford Regional Planning Commission; UNH-NH GRANIT; City of Portsmouth; USEPA; Lamprey River Advisory Committee; NHF&G-Marine Fisheries Division; Conservation Law Foundation; The Nature Conservancy; and Great Bay Trout Unlimited. At the CAW meeting on June 26, 2014, meeting attendees confirmed the Wetlands, Coastal Hazards, and Cumulative and Secondary Impact enhancement areas as high priority focus areas for the next five years. In addition, they identified emerging issues, management priorities and resource gaps for each of these enhancement areas. For example, the discussion identified a recent trend where municipalities were decreasing the minimum size of wetlands buffers and noted that determining the size of adequate, protective buffers through the lens of climate change was a priority over the course of the next few years. The group also determined that while more information was needed on the effects of climate change with respect to coastal hazards, it was critical that both new and existing information on coastal hazards be disseminated such that the information can be easily used by coastal communities.

Additional support for priorities and strategies for this Assessment came through the PREP *Comprehensive Conservation and Management Plan* (2010) as well as the *New Hampshire Nonpoint Source Management Program Plan* (NHDES, 2014). Because both management plans are based on input from stakeholders and prioritize issues and strategies, they, too, serve as stakeholder and public guidance on Section 309 activities.

Upon completion of the draft *2016 Section 309 Assessment and Strategy* in February 2015, the report was subjected to a 30-day public comment period. Partners and stakeholders, including numerous agencies and organizations, were invited to comment. No comments were received during the public comment period.

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