Aquaculture

1. Section 309 Enhancement Objective

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

Resource Characterization

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

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

Type of existing aquaculture facility	Describe recent trends	Describe associated impacts or use conflicts
NJ Multispecies Aquaculture Demonstration Facility	See below	None
Shellfish (116)*	See Below	See Below
Finfish (12)*	See Below	
Aquatic Plants (1)*	See Below	
Combined Aquatic Plants and Finfish (1)*	See Below	
Other (1)*	See Below	

*These numbers represent licensed aquatic farms in New Jersey. There may be more that have yet to comply with the Aquatic Farmer License program.

New Jersey Multispecies Aquaculture Demonstration Facility

Construction of the New Jersey Multispecies Aquaculture Demonstration Facility (MADF) was completed during this assessment period with a grant from the National Oceanic and Atmospheric Administration. Additional funds were provided by Rutgers, the New Jersey Commission on Science and Technology, PSE&G, and the Casino Reinvestment Development Authority for a total of $ 7.7 million. This facility provides a fully equipped hatchery building and nursery facility for shellfish and finfish, ponds for finfish growout, and leased grounds in Delaware Bay and along the eastern New Jersey coast for shellfish growout. In addition, Rutgers Cooperative Extension of Ocean County conducts research and business feasibility on 48 varieties of ornamental aquatic plants at the facility. Using New Jersey's natural assets, the MADF can be used to stimulate economic growth, provide employment opportunities, act as a business incubator, assist in aquatic restoration efforts and move New Jersey's aquaculture production into the global market place. The MADF could also represent a critical component in efforts to revitalize the oyster industry in Delaware Bay and other east coast bays by providing seed for use on industry leased grounds. At the MADF, members of the New Jersey fishing industry, aquaculture entrepreneurs, and those interested in aquatic restoration will be able to learn methods of commercially raising seafood, thus enabling them to compete with industries from surrounding states already engaged in the practice. However, full implementation and success of these goals for the MADF can only be accomplished if a stable source of funding for the facility and its staff becomes available.

Shellfish

Almost all aquaculture in New Jersey's waters consists of hard clams (*Mercenaria mercenaria*) and oysters (*Crassostrea virginica*). Approximately 2,500 acres of bottom are leased along the Atlantic Coast estuaries (excluding the Delaware Bay) of which fewer than estimated 600 acres are actively used for hard clam aquaculture activities. Oyster aquaculture activities are dominant in the Delaware Bay. However, of the approximately 34,000 acres leased, less than an estimated 10% are actively used for traditional aquaculture activities such as shell planting and seed transplanting. A few members of the fishing community have initiated a pilot scale oyster farm extending over a few acres in the vicinity of the Rutgers University Cape Shore Hatchery in Middle Township, Cape May County. These operations primarily utilize hatchery seed grown on intertidal rack and bag systems. Both hard clams and oysters have a long history of commercial production and the biological and commercial potential remains quite high in New Jersey.

Of particular importance to aquaculture in New Jersey is the production of hard clams (72 of the total licensed mollusc facilities). According to the best data currently available, hard clams account for two-thirds of total aquaculture farm-gate sales in New Jersey. In fact, New Jersey ranks 5th among hard clam producing states behind Virginia, Florida, Connecticut and Massachusetts. The top one-third of hard clam growers produces 87% of all hard clams grown in New Jersey. Many of these top growers are third to fifth generation baymen whose families helped to develop a hard clam aquaculture industry in New Jersey.

The Delaware Bay oyster industry is one of the oldest forms of aquaculture in North America (oyster aquaculture facilities represent 44 of the 116 licensed facilities, 14 of those facilities are combined oyster and clam facilities). While oyster landings of over one million bushels in the early 1900s was not considered sustainable for the region, oyster landings have been drastically reduced from more typical historical highs to an average of approximately 75,000 bushels since 2000. Most of the current harvest comes directly from the seed beds rather than aquaculture leases, mainly because of problems with Dermo disease. Dermo, a virulent parasite, remains one of the biggest threats to both naturally grown oysters, as well as those produced by aquaculture activities. Poor health due to heavy Dermo infections prior to or during the spawning season may decrease fecundity or spawning success.

Finfish

One private trout hatchery located in Warren County grows fish mainly for stocking purposes and a small, but growing amount for local food markets. This hatchery is one of the oldest trout farms in the Northeast, with records dating back to the late-1800s. There is one 47-acre koi farm that produces relatively few, extremely high value show quality koi for koi hobbyists. In 2005, New Jersey produced the most valuable koi in the US at more than 23 times the national average value. One sizeable aquatic plant nursery grows dozens of varieties of aquatic plants. The remaining aquaculture production in New Jersey consists of experimental, hobby, and pilot-scale projects.

Adequate waterfront access for water dependent uses in New Jersey, including aquaculture and other commercial fisheries, is threatened by ever-increasing residential and commercial real-estate development along the state's densely developed coastline. Dock space and sites for activities related to landing and processing the catch are limited due to the high demand and high value of waterfront property. Some of the infrastructure and equipment used for commercial aquaculture, such as racks and bags, cages, pens, etc. placed at or below the surface of the water, can limit other water dependent uses such as recreational boating and fishing in areas where aquaculture activities occur, as this specialized equipment can interfere with boat navigation and fishing gear. There is some evidence of environmental benefits to habitat and water quality from

certain shellfish aquaculture techniques. However, in New Jersey, where user competition for space along the shore and in coastal waters is particularly keen, a sound management and enhancement strategy, while critical to establishing a more robust aquaculture industry in the state, must also address potential conflicts.

As demonstrated above, interest in finfish aquaculture in New Jersey remains low. If the desire to conduct this activity increases, environmental benefits, impacts and concerns including effects on water quality and native fish stocks will need to be examined and addressed.

Management Characterization

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

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

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

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

Aquaculture Regulations

New State and Federal Regulations

a) The Aquaculture Development Act of 1997 directs the New Jersey Department of Agriculture to establish a permit coordination system for aquaculture development in conjunction with other permitting agencies. State regulations at N.J.A.C. 2:89, which initially became effective in April 2004, developed this permit coordination system, called the Aquatic Farmer License (AFL) Program. Licenses are valid for five years and then must be renewed. Within the first calendar year of the Program, 2004, 112 AFLs were issued. Fifty-six additional licenses were issued in 2005 for a total of 168 two years after the new rules became effective. At the peak, a total of 192 AFLs were recorded. Since these regulations expire five years after the effective date, N.J.A.C. 2:89 was readopted in late 2009. A set of rules that add significant improvements to the AFL program has been drafted. The State Board of Agriculture approved these rule changes in July 2009. It is anticipated that the proposed rules will be adopted in 2010.

On March 17, 2007, the U.S. Army Corps of Engineers (ACOE) reissued Nationwide Permits and issued six new Nationwide Permits. One of the new Nationwide Permits was Nationwide Permit 48 (NWP 48), which addresses existing commercial shellfish aquaculture activities. It does not pertain to new aquaculture facilities. NWP 48 requires notice to the ACOE as well as a federal consistency determination from the NJDEP. Because these activities also require a coastal permit from NJDEP, the coastal permit serves as the federal consistency determination. NJDEP's Division of Fish and Wildlife applied for and obtained both a NWP 48 and NJDEP coastal permits on behalf of New Jersey's existing commercial shellfish aquaculture facilities. The NJDEP coastal permit will allow new leases in identified shellfish culture lease areas along the Atlantic Coast of New Jersey and Delaware Bay. New aquaculture facilities constructed after March 17, 2007 are required to obtain a permit from the ACOE as well as a coastal permit issued by the NJDEP.

b) These significant changes were not driven by 309 or other CZM changes or efforts, although the coastal permitting was conducted through CZM 306 funds.

c) The coastal permit obtained by the NJDEP Division of Fish and Wildlife is expected to facilitate the construction of new aquaculture facilities in the identified areas.

Significant Changes to Title 50 (N.J.S.A. 50)

a) The shellfish statutes at N.J.S.A. 50 et seq., referred to as Title 50, provide the NJDEP Commissioner full control and direction of the shellfish industry and resource throughout the entire State, subject to the provisions of this statute. The statute specifies that the Commissioner shall make such rules and regulations as may be necessary for the preservation and improvement of the shellfish industry and resource of the State, after consultation with the Shellfisheries Council and subject to the approval of the Marine Fisheries Council. Title 50 provides the statutory authority for the establishment of regulations governing shellfish issues related to both "wild" harvest and aquaculture.

From 1999 through 2008, Title 50 underwent an extensive review via a number of committees with participation by representatives of the NJDEP, the New Jersey Department of Agriculture, the New Jersey Shellfisheries Council, New Jersey Marine Fisheries Council, New Jersey Aquaculture Advisory Council (AAC), Rutgers University, as well as the recreational and commercial shellfishing community. During this review written endorsements were received from all relevant advisory councils and the statute was amended effective January 13, 2008. In short, the amendments remove antiquated sections of the statute that have not been applicable to New Jersey's shellfish management programs for many years and provide new sections that reflect the needs of both resource managers and resource users, particularly with respect to the oyster fishery in Delaware Bay.

b) These significant changes were not driven by 309 or other CZM changes or efforts.

c) The two most noteworthy changes relevant to Delaware Bay are 1) the removal of the current prohibition on aquaculture leasing in the lower Bay (i.e., below the "Clam Line") and 2) the removal of language that had the potential to charge oyster harvesters twice ("double taxation") for oysters that originated from the State's natural seed beds. The former change allowed the NJDEP to establish "Aquaculture Development Zones" (ADZs) where aquaculturists can employ innovative shellfish culture practices. To date, the NJDEP Division of Fish and Wildlife has obtained the State and Federal permits necessary for four ADZs in Delaware Bay, including the

area below the "Clam Line" that was previously prohibited by statute. Unfortunately, other permitting and licensing issues – not related to Title 50 - have not permitted the ADZ program to commence to date. The second change, the removal of the language that could have been interpreted to lead to "double taxation," has permitted the NJDEP to manage the direct market fishery through the continued administration of a landing fee program that is collected prior to harvest, without the potential statutory requirement to receive the fees after the oysters are landed.

Aquaculture Policy

Aquaculture Development Zones in the Delaware Bay

a) As a complement to the existing shellfish leasing process and regulatory framework allowing for traditional cultivation activities (e.g., shell planting, oyster transplanting and use of predator exclusion screens in hard clam cultivation), state shellfish aquaculture expansion plans initiated in the early 2000s included Aquaculture Development Zones (ADZs) as a mechanism to allow for use of structural aquaculture systems. Over the last ten years, the ADZ planning process progressed as a collaborative effort by the NJDEP Division of Fish and Wildlife, the New Jersey Department of Agriculture, the AAC, the New Jersey Shellfisheries Council, Rutgers University, and shellfish industry members. In May 2003, the AAC released the Leasing Committee Report "Aquaculture Leasing in New Jersey with Special Emphasis on Development Zones." As documented in the report, state and federal permitting issues were considered a major impediment to the development of structural aquaculture operations, and the ADZ concept was envisioned as a mechanism for facilitating the regulatory process by having the NJDEP Division of Fish and Wildlife obtain blanket permits for a selected group of sites ready for leasing to prospective leaseholders.

A new AAC Leasing Committee Report involving ADZ leasing recommendations including applicant eligibility, selection criteria via a lottery process, lease fee structure, lease utilization criteria and business plan, was issued in November 2008 and approved at the AAC meeting in January 2009. Subsequently, the Atlantic Coast Section of the Shellfisheries Council discussed the report with the Delaware Bay Section of the Council, which would take the lead with implementation of Delaware Bay ADZs. While a new rule proposal governing ADZ leasing is being established by the NJDEP Division of Fish and Wildlife, leasing would be implemented via a detailed lease agreement and following a public announcement of ADZ parcel availability.

b) These significant changes were not driven by 309 or other CZM changes or efforts.

c) In November 2005, following the May 2003 AAC report recommendations, the NJDEP Division of Fish and Wildlife obtained the permits from NJDEP's Division of Land Use Regulation authorizing the establishment of four Delaware Bay ADZs for structural shellfish cultivation activities, including the use of rack and bag systems, intertidal and floating long lines, cages, trays and spat collecting devices. The companion federal permit from the ACOE was issued in February 2006. The four Delaware Bay ADZs cover approximately 1250 acres in total.

Resolution Concerning Aquaculture License Fees Assessed by the Tidelands Resource Council

The Aquaculture License Fee policy ensures that large shellfishing structures are licensed appropriately. Individual shellfish markers (i.e. a single stick in the water) are not required to be licensed through the Tidelands Resource Council. The Tidelands Resource Council does not regulate the shellfishing activity; it only licenses the occupation of the submerged lands.

Numerous applications for rack and bag systems, net systems, and the like, have been received by the NJDEP Bureau of Tidelands Management. These activities are unique in that they occupy large areas of submerged land and water that, in some cases, could impede use by the public as

open waters of the State. In some cases these systems could be located in open water without waterfront access.

New aquaculture policy resulting from the Tidelands Resource Council Resolution provides:
1) Where the structure is clearly visible from land or where the structure would impede local navigation, approval from the upland owner would be required for a license to be issued. The Tidelands Resource Council will not approve a license without upland owner approval.

2) As it is not clear what the impact will be on the open State waters, aquaculture licenses will be limited to a 3-year term. They will be renewable and revocable.

3) The license will be charged at a nominal rate of $0.01 per square foot since it is difficult to determine a true economic value for the area.

4) This policy will be re-evaluated 3 years from February 2010 and presented to the Tidelands Resource Council prior to renewing the current licenses.

b) These significant changes were not driven by 309 or other CZM changes or efforts.

c) This new policy was adopted by the Tidelands Resource Council in February 2010. Outcomes and effectiveness of the changes are not yet available.

State ban on research-related gardening of commercial shellfish

a) In June 2010, the NJDEP Commissioner banned research-related gardening of commercial shellfish species in coastal and inner harbor waters classified as contaminated and announced that species now being grown in such waters must be removed. The NJDEP will not issue new permits for gardening of commercial shellfish, even for ecological restoration projects, in prohibited or restricted waters. The goal of this policy is to protect the public health and the economic health of the state's nationally significant shellfish industry. This new policy will minimize the possible negative impact to New Jersey's $790 million-a-year shellfish industry, which could be severely damaged by an illness outbreak related to the poaching of gardened or restored shellfish raised in research or educational projects.

These changes will also further the State's efforts to come into compliance with U.S. Food and Drug Administration regulations requiring regularly scheduled law enforcement patrols in areas where shellfish exist in polluted waters to ensure the state's commercial industry does not face sanctions or closure. In order to comply, the NJDEP is rebuilding, training and certifying its patrol team to meet those needs in commercially fished areas.

The primary growers of shellfish in tainted or seasonally approved waters are environmental organizations, with assistance from school groups, which are involved in scientific and educational efforts, including getting students involved as stewards of local waters. In those endeavors, a variety of commercial shellfish, including oysters, hard clams and blue mussels, are grown for study purposes. However, poachers could target those locations and steal the fish, which could be sold to consumers. The NJDEP makes about 60 arrests annually of illegal harvesters or poachers in restricted waters, primarily in the New York/New Jersey harbor and Raritan Bay. But the NJDEP does not have the resources to adequately patrol these areas where new shellfish are placed by gardeners, leaving them open to poachers, which is a concern to the FDA.

b) These significant changes were not driven by 309 or other CZM changes or efforts.

c) In July 2010, the NJDEP issued a notice of violation to the NY/NJ Baykeeper, directing the nonprofit group to remove its research-related shellfish project from contaminated state waters. The NJDEP took this action after the Baykeeper declined to comply with a previous written request from NJDEP to follow its permit requirements and remove its shellfish operation from the waters of New York Harbor.

Aquaculture Program Guidance and Aquaculture Education & Outreach

a) The Aquaculture Development Act of 1998 designated the Aquaculture Technology Program at Cumberland County College, which began operations in February 2004, as the official Aquaculture Technology Information Center for the State of New Jersey. Additionally, Cumberland County College operated the "Fish Barn," a recirculating system for growing tilapia. The Aquaculture Technology Program and the "Fish Barn" were directly involved in training students who established three commercial ventures producing tilapia, shellfish and aquatic plants that fill the unique demands of local markets; leading outreach activities and hands-on aquaculture programs at Bayshore State Prison and two high schools; and producing approximately 1,000 pounds/week of both live and fresh on-ice tilapia which were shipped weekly to several supermarkets across New Jersey.

Loss of funding from the state and the Commission on Science and Technology seriously impacted the ability of Cumberland County College facilities and programs to achieve their potential. These lost funds were originally designated for facility operating expenses. In 2007, then Secretary of Agriculture Charles M. Kuperus formed the Aquaculture Working Group (AWG) to function as a subcommittee of the Aquaculture Advisory Committee. The impetus for the formation of the AWG was largely the disbanding of aquaculture operations and instruction at Cumberland County College.

The AWG met in May 2007 to begin a dialogue on the growth potential of the aquaculture industry. Specifically, the AWG considered how policy and regulations impact the potential to develop strategies to optimize the efficiency of aquaculture training and outreach activities; to expand into innovative techniques; to test alternative species; and to identify new market opportunities for aquaculture products. The AWG also discussed recommended strategic investments in the human resources that will benefit current and prospective aquatic farmers across the region.

b) These significant changes were not driven by 309 or other CZM changes or efforts.

c) The AWG delivered its final report at the July 2008 meeting of the AAC. The report of the AWG includes recommendations for:

- Identifying ways to capitalize on new market opportunities and deepening the understanding of consumer demand;
- Incorporating best practices into production and value-added methods;
- Enhancing environmental stewardship and waste management practices;
- Providing guidance on regulatory issues; and
- Coordinating and integrating various industry resources such as research on genetics and value-added opportunities; business development assistance; and educational outreach.

The AWG identified the most significant barriers to development as: 1) lack of communication and coherency among education/extension programs and state agencies, 2) lack of a coherent regulatory framework to support the development of an environmentally benign and

economically vibrant industry, and 3) lack of dedicated funding to prime the pump for additional sources of support.

Research, assessment, monitoring

a) The decline of the oyster industry in the mid-Atlantic region initiated the joint Delaware Bay Benthic Mapping project between the New Jersey Coastal Management Program (NJCMP), the Delaware Coastal Program and the Partnership for the Delaware Estuary. This 2007 project called for the assessment of the status of oyster habitat in the Upper Delaware Bay through the use of several remote sensing data collecting techniques. The project integrated the use of three types of acoustical systems: Roxann seabed classification system, chirp sub-bottom profiling, and multi-beam bathymetric mapping. Verification of the acoustic data was performed with bottom and sub-bottom grab and core samples and underwater video images.

b) This was a 309 driven change.

c) The integration of this data combined with previous dredge surveys provided, for the first time, a comprehensive spatial assessment of current oyster bottom conditions which will improve the capabilities for regional management of shellfish resources in the bay, especially the evaluation of site placement of shell for restoration and the role of oyster dredge data in distribution and habitat studies.

This study also contributed to the knowledge base on the preferred habitat for Short-nose and Atlantic sturgeon and the impact increased navigational channel dredging may have on the characteristics of key habitat required to sustain their populations. This information was also used to locate potential borrow sites for beach replenishment and to evaluate the movement of bottom sediments in response to human impacts (intensive commercial fisheries dredging, artificial reef placement, navigational channel and maintenance dredging).

While this study provided excellent baseline information on the bottom sediments and substrate, its findings were integral to an additional joint partnership between EPA, NOAA Restoration, New Jersey and Delaware Coastal Management Programs and the Partnership for the Delaware Estuary for an in depth benthic community mapping study for the entire Delaware bayshore region.

Education and Outreach

<u>Delaware Bay Oyster Restoration Project</u>

a) The NJDEP's Division of Fish and Wildlife led New Jersey's segment of the *Delaware Bay Oyster Restoration Project* as a member of the Delaware Bay Oyster Task Force (Task Force). Working with federal and state legislators and the Governors of both Delaware and New Jersey, the Task Force obtained over $6.1 million dollars in federal funding from 2005 through the project's completion in 2008. The program planted over 2.1 million bushels of shell onto existing oyster reefs to provide the clean surface necessary for setting oyster larvae and for general reef maintenance. Led by the Partnership for the Delaware Estuary, the project has a significant public outreach component that furthers and encourages increased public awareness and future collaboration. The oyster restoration project's education campaign underscores the importance of working together to maintain a healthy and productive ecosystem with long-term economic benefits in spite of state boundaries and regulations.

In relative short order, the program managed to stabilize the oyster reefs of Delaware Bay and substantially increased the survival of juvenile oysters. As a case in point, the projected harvest of oysters set in 2008 is now the third highest since the mid-1980s, and the estimated impact

of the 2007 shell planting program alone is $90 million, equating to more than $40 for every federal dollar invested. This was accomplished in the face of intense oyster disease pressure and poor recruitment throughout the Bay. The project was recently awarded a *Coastal America Partnership Award*, which is the only environmental award of its kind given by the White House and adds to a growing list of accolades for the joint New Jersey-Delaware effort. The program was primarily centered in Cumberland County but has spanned the entire length of the Delaware Bay with project sites off of Cape May and Salem Counties.

b) These significant changes were not driven by 309 or other CZM changes or efforts.

c) This federal program commenced in 2005 and was completed in 2008. However, given the level of success, Task Force participants continue to pursue every lead available to them in an effort to maintain the shell planting program for years to come.

Barnegat Bay Shellfish Restoration Program

a) With a focus on water quality and shellfish education and outreach rather than on commercial aquaculture harvest, the Barnegat Bay Shellfish Restoration Program is a partnership between Rutgers New Jersey Agriculture Experiment Station Cooperative Extension and the NJDEP Division of Fish and Wildlife, Bureau of Shellfisheries. Its goals are to educate the community about the natural cycle and ecology of the Barnegat Bay, to promote environmental stewardship, and to use clams and oysters as the teaching tool to achieve these goals, including improving the understanding of how human activities can degrade New Jersey's waters and our shellfish populations. In 2008 the Barnegat Bay Shellfish Restoration Program won two National Extension Awards at the Association for Natural Resource Extension Professionals Meeting, and two Governor's Excellence Awards - The Governor's Excellence Award in Tourism for the Clam Trail, and an Honorable Mention in the Healthy Ecosystems Category of the Environmental Excellence Awards.

b) These significant changes were not driven by 309 or other CZM changes or efforts.

c) The Barnegat Bay Shellfish Restoration Program offers a volunteer education program concerning shellfish aquaculture and water quality. The instructors are scientists from the Rutgers Haskin Shellfish Research Lab, Cooperative Extension, and the NJDEP. In the past 6 years, 150 volunteers have participated, and they have raised 7.5 million clam seed, and 1,075,000 disease resistant oysters. Besides raising clams and oysters, the volunteers educate the public about shellfish, water quality, the Barnegat Bay, and wise use of resources to help keep the Barnegat Bay a treasured resource for future generations.

Priority Needs and Information Gaps

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

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Majority of aquaculture in NJ's waters is	Data	M

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
hard clams aquaculture. However, the current distribution and abundance of naturally occurring hard clams (*Mercenaria mercenaria)* in Barnegat Bay are not well known (updates reflected in 2001 surveys indicate decreases in abundance from 1980's) and impacts of the loss of clam resources on the ecology of the Bay are not well understood. Such information could have an impact on hard clam aquaculture policy and management if it were available.		

Enhancement Area Prioritization

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

High _____
Medium _____
Low ___X__

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

The level of priority given for this enhancement area reflects the limited suitability of Section 309, with its emphasis on program changes, for addressing the underlying issues and gaps identified. This ranking also considered the enhancement area's relatively low priority for the Coastal Management Office in the overall management of the coastal zone beyond the use of Section 309 funding. However, the Coastal Management Office will continue to coordinate with other NJDEP offices as well as with the Department of Agriculture and other interested parties on Aquaculture related efforts and initiatives as they occur.

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

Yes_____
No ___X___

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

None of the identified needs or gaps are appropriate for section 309 funding as data collection efforts and outreach and communication initiatives are not eligible program changes. Such efforts can be addressed through other CMP funding and through partnership efforts.

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.

Resource Characterization

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

1. Characterize the level of risk in the coastal zone from the following coastal hazards:

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

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

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

Flooding, Coastal Storms, and Shoreline Erosion

Many parts of New Jersey's densely populated coast are highly vulnerable to the effects of flooding, storm surge, episodic erosion, chronic erosion, sea level rise, extra-tropical, tropical storms, and hurricanes. The risk to the State's coast posed by each of these particular hazards is likely to be complicated by anticipated climate change. Historical experience and vulnerability to coastal hazards are documented within each county's Multi-Hazard Mitigation Plan (produced in accordance with Federal Emergency Management Agency guidance under the Disaster Mitigation Act of 2000) and assessments produced by both the federal government and regional academic institutions.

New Jersey's coastal area is comprised of a variety of different landscape types ranging from elevated headlands to wave-dominated and mixed-energy barrier islands to extensive mosaics of tidal and freshwater wetlands. Although each of these areas has evolved uniquely in response to their respective environmental conditions over many millennia, the entirety of New Jersey's coastal area is subject to the damaging impacts of coastal hazards including riverine and coastal flooding and gale-force winds from hurricanes, nor'easters and extreme rain events. The magnitude, duration and seasonality of each of these coastal hazards vary throughout coastal New Jersey. Unfortunately, the proximity of much of New Jersey's population and infrastructure lies within these highly vulnerable regions of the state. Long-term biophysical and climate trends indicate that New Jersey will likely be subject to continued shoreline erosion, higher sea levels, and accompanying loss of natural coastal buffers (leading subsequently to more extensive overland storm surges and periodic inundation/flooding) as well as stronger and more frequent storm events. As a result, coastal managers and decision makers need to accurately identify natural hazard risks and vulnerabilities in order to provide proactive guidance in planning and mitigating against potentially damaging events.

Sea Level Rise

A recent characterization of the anticipated coastal impact of sea level rise was produced by Princeton University researchers in 2005[1]. The researchers derived localized sea level rise projections based on a combination of global and local factors, yielding an estimated range of between 0.31 and 1.10 meters by the year 2100. The researchers then generalized the projections to 0.61 meter/2 feet and 1.22 meter/4 feet based on the accuracy of existing elevation data. The result was that 1 - 3% of New Jersey's land area will be subject to permanent inundation by the end of the century. Projecting these same sea level rise estimates onto the base flood elevations of present flood hazard areas, the researchers concluded that future flood hazard areas may encompass 6.5 – 9% of the State.

Subsequent research by Rutgers University's Center for Remote Sensing and Spatial Analysis and the American Littoral Society sought to identify vulnerable development and where such development would inhibit the natural landward migration of coastal wetlands in response to sea level rise[2]. The researchers identified a 500 meter buffer from present shoreline as the anticipated landward extent of future sea level rise. Researchers found that 42% of the study area was determined to be developed, primarily in the form of roads, buildings, and other infrastructure. Additionally, 29% of the state's tidal marsh extent was constrained by these developed land uses inhibiting their horizontal migration in response to sea level rise, resulting in the loss of habitat and exacerbating the threat of storm surge to coastal development.

Given the uncertainty of coastal geomorphic response to future rates of sea level rise, the United States Geological Survey convened a workshop to develop a consensus opinion on potential future coastal changes to the mid-Atlantic coast[3]. Potential sea level rise scenarios were evaluated for various geomorphic coast types (spits, headlands, wave-dominated barrier islands, mixed-energy barrier islands). The four scenarios evaluated were: a) a continuance of the 20th century rate of rise, b) an increase of 2 mm/year to the 20th century rate, c) an increase of 7 mm/year to the 20th century rate, and d) a net rise of 2 meters by the year 2100. Potential responses of these coastal geomorphic types indicated that each scenario would result in an

[1] Cooper et al. Future Sea Level Rise and the New Jersey Coast: Assessing Potential Impacts and Opportunities. Princeton University. Nov. 2005.
[2] Lathrop and Love. Vulnerability of New Jersey Coastal Habitats to Sea Level Rise. Rutgers University. Jan. 2007.
[3] Gutierrez et al. Potential for Shoreline Changes Due to Sea-Level Rise along the U.S. Mid-Atlantic Region. United States Geological Survey. Report Series 2007-1278.

increased likelihood for erosion and shoreline retreat, an increased likelihood for erosion, overwash and inlet breaching for barrier islands, as well as the possibility of segmentation or disintegration for some barrier island systems.

In January 2009, the United States Climate Change Science Program released its Synthesis and Assessment Product 4.1 on Coastal Sensitivity to Sea Level Rise focusing on the mid-Atlantic region[4]. This report describes the physical environments; potential changes to coastal environments, wetlands, and vulnerable species; societal impacts and implications of sea-level rise; decisions that may be sensitive to sea-level rise; opportunities for adaptation; and institutional barriers to adaptation, providing a critical framework for policy contexts in the mid-Atlantic region and implications of sea-level rise impacts for other regions of the United States.

Tide gauges established in southern New Jersey for many decades provide historic evidence of rising sea level trends. However, the accuracy in the prediction of future conditions based on past trends is complicated by contributions from changes in land level due to glacial isostatic adjustment (subsidence or rebounding). Research conducted by the University of Pennsylvania on regional levels of subsidence and sea-level rise indicate that the southern extent of New Jersey's Delaware Bay is among the most rapidly submerging portions of the United States at approximately 3.5 mm/year[5]. This research further indicates that the diminution of the Laurentide Ice Sheet within the Holocene period has led to a rate of sea level rise in the mid-Atlantic that is 2 millimeters per year higher than the background rate over the past 4,000 years.

As previously noted, numerous state, regional, and national assessments indicate that the risk of flooding, coastal erosion, sea level rise, and tropical and extra-tropical coastal storms are a clear and present risk to the state's landscape, population and economy.

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

While the level of risk for each of the coastal hazards in the Section 309 Assessment remains unchanged from the previous Assessment, recent research, as previously noted, has improved the Coastal Management Office's understanding of coastal hazards and sea level rise.

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

The Coastal Management Office has developed a vulnerability mapping index (currently in draft) that integrates the various biophysical factors that contribute to natural hazard vulnerability along New Jersey's wetlands-dominated Delaware Bay region. The vulnerability mapping protocol is presently being piloted in communities along Delaware Bay and select communities in Monmouth County to test the scalability and potential application in other coastal communities in New Jersey.

5. Use the table below to identify the number of communities in the coastal zone that have a mapped inventory of areas affected by the following coastal hazards. If data is not

[4] Titus et al. Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region. Report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. Synthesis and Assessment Product 4.1. Jan. 2009

[5] Engelhart et al. Spatial Variability of Late Holocene and 20th Century Sea-Level Rise Along the Atlantic Coast of the United States. Geology. V. 37, no.12, p. 1115-1118. Dec. 2009.

available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

Type of hazard	Number of communities that have a mapped inventory	Date completed or substantially updated
Flooding	75	County-specific. June 2008-present
Storm surge	75	County-specific. June 2008-present
Geological hazards (including Earthquakes, tsunamis)	75	County-specific. June 2008-present
Shoreline erosion (including bluff and dune erosion)	75	County-specific. June 2008-present
Sea level rise	4	January 2011
Great lake level fluctuation	n/a	n/a
Land subsidence	unknown	unknown
Other (please specify)		

FEMA approved county all-hazard mitigation plans provide communities with mapped inventories of flooding, storm surge, and many other natural hazards. As more coastal counties develop all-hazard mitigation plans, more coastal communities will have access to hazard maps and data. While these plans are not required to address sea level rise, many communities are eager to incorporate sea level rise maps into their plans. In late 2010, the New Jersey Coastal Management Office completed sea level rise mapping for Salem, Cumberland, Cape May, and portions of Monmouth County and provided maps and geospatial data to Cape May Point, Greenwich Township, Little Silver, and through the New Jersey Sea Grant Consortium's Coastal Community Resilience Demonstration Project. The New Jersey Coastal Management Office intends to continue mapping sea level rise vulnerability for coastal communities throughout the state. Storm surge and sea level rise mapping will be hosted on a website through a partnership with Rutgers' Center for Remote and Spatial Analysis and the Jacques Cousteau National Estuarine Research Reserve. While geospatial land subsidence data is not presently available, recently installed sediment elevation tables will provide the State with new insight and information to narrow this data gap.

Management Characterization

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

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

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Building setbacks/ restrictions	Y	Y
Methodologies for determining setbacks	Y	N
Repair/rebuilding restrictions	Y	N
Restriction of hard shoreline protection structures	Y	N

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

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

a) Characterize significant changes since the last assessment;

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

c) Characterize the outcomes and effectiveness of the changes.

Building setbacks/restrictions

a) In 2007, the NJDEP adopted revised Flood Hazard Area Control Act regulations. These regulations incorporate more stringent standards for development in flood hazard areas and riparian zones adjacent to surface waters throughout the State in order to better protect the public from the hazards of flooding, preserve the quality of surface waters, and protect the wildlife and vegetation that exist within and depend upon such areas for sustenance and habitat. These rules also carried forward the restrictions on development in floodways to tidal waters.

b) This change was not driven by 309 or other CZM changes or efforts.

c) The NJDEP adopted these new rules in order to better protect the public from the hazards of flooding.

Local hazards mitigation planning

a) In compliance with the Disaster Mitigation Act of 2000 and New Jersey State Hazard Mitigation Plan, all of New Jersey's coastal counties have, at a minimum, initiated development of a multi-hazard mitigation plan (although, to date, many counties have either submitted or

received approved plans from FEMA), which identifies the likely severity and geographic extent of various natural hazards in the region. The Coastal Management Office has supported the development of these plans by providing a technical workshop for county planning and emergency management officials to identify and assess regional hazards in preparation for plan development. Additionally, the Coastal Management Office has partnered with the New Jersey Sea Grant Consortium to work with four coastal communities, including Cape May Point, Greenwich Township, Little Silver, and Oceanport, to help them identify their vulnerability to storm surge and sea level rise. Monmouth County Office of Emergency Management has appended the maps to their county all-hazard mitigation plan.

b) This change was driven by CZM funding (in addition to FEMA Pre-Disaster Mitigation Grant Program, Hazard Mitigation Grant Program, Flood Mitigation Assistance funding 2005-2007, and a NOAA grant to NJ Sea Grant Consortium). Participation by the Coastal Management Office in education and outreach has utilized 309 funds.

c) The provisions of both the Disaster Mitigation Act of 2000 and the New Jersey State Hazard Mitigation Plan have provided strong guidance to municipal and county officials in identifying the potential severity and scope of potentially disruptive and/or damaging coastal hazards. As additional county plans are completed and supplemented with improved data in the future, the effectiveness of the plans will continue to improve the capacity of decision makers to identify and plan for future coastal hazard scenarios.

Climate change planning and adaptation strategies

Since the last assessment, the Coastal Management Office has dedicated 309 funding to the development of 'Getting to Resilience,' a questionnaire to help local decision makers identify ways to decrease their vulnerability and improve their resilience to coastal hazards and/or sea level rise through planning, municipal codes, and emergency preparedness and response. By working with the New Jersey Department of Environmental Protection's Office of Climate and Energy and statewide partners, the New Jersey Coastal Management Office is presently working to incorporate the questionnaire as an action item within Sustainable JerseyTM, which is a certification and incentive program developed by a collaborative effort of state, academic, and non-profit groups to promote sustainable community initiatives. Sustainable JerseyTM provides communities with mandatory actions to improve their long-term sustainability, in addition to allowing them the flexibility to improve their longevity and character through changes in municipal planning, regulations, and creative grassroots initiatives. By participating in Sustainable JerseyTM, municipalities receive a comprehensive package of tools, guidance materials, training, and financial incentives. Launched in 2009, nearly fifty coastal communities are currently participating in the program.

b) Yes, this was a 309 driven change. While this was not a specific strategy identified in the last 309 Enhancement Strategy, the *Getting to Resilience Questionnaire* was a natural accompaniment to the vulnerability mapping protocol (identified below) and the work with local government officials.

c) To date, the NJCMO has applied the 'Getting to Resilience' questionnaire in four coastal communities. The NJCMO intends to reach out to additional coastal communities participating in the Community Rating System (CRS), an incentive program developed by FEMA to guide communities to reduce their vulnerabilities to coastal flooding. Building on the success of Sustainable Jersey and CRS, the NJCMO will continue to target this tool to coastal communities and seek to broaden their knowledge of coastal hazards, associated impacts and best management practices to improve their resilience.

Hazards research and monitoring
a) Since the last assessment, the Coastal Management Office has dedicated Section 309 funding to the acquisition of high-resolution LiDAR elevation data for the Salem, Cumberland, and Cape May portions of Delaware Bay. By including a provision that the LiDAR acquisition be conducted within three hours of mean low tide, the elevation data provides a highly accurate characterization of southern New Jersey's coastal landscape and associated natural and human features. Based on this elevation data, Coastal Management Office staff has been working to develop a GIS-based Coastal Vulnerability Assessment and Resilience Protocol to identify the potential impacts of coastal hazards and sea level rise on the built and natural environment. The Coastal Vulnerability Assessment Protocol integrates biophysical and socio-economic data to assist local planners, emergency managers and elected officials identify present and future vulnerable areas and populations and establish proactive frameworks for addressing hazards in both local planning and development processes. The results of this assessment will help the Coastal Management Office provide community outreach in regards to coastal hazards and climate change.

b) This was a 309 driven change.

c) Both the vulnerability assessment and resilience protocol are being piloted in several communities on the Delaware Bayshore and in Monmouth County. To date, academic, local, county and state officials have been enthusiastic about the prospect of a regionally specific assessment and protocol to document the relationship between present and future coastal hazard impacts and development.

Hazards education and outreach
a) As part of the Coastal Management Office's coastal hazard vulnerability assessment and resilience protocol, staff has been actively engaged with institutional partners in providing education and outreach to county and local officials on the changing nature of the State's coastal hazards. Coastal Management Office staff has attended meetings with county emergency managers, coordinated geographic information system (GIS) training modules for local planners and engineers, given public presentations at regional science conferences, and provided technical assistance with county multi-hazard mitigation plans, and scientific analysis of New Jersey's coastal processes and hazard assessment.

b) This was a 309 driven change, along with non-CZM funding (FEMA Pre-Disaster Mitigation Grant Program, Hazard Mitigation Grant Program, and Flood Mitigation Assistance funding 2005-2007).

c) To date, the Coastal Management Office' has been effective in disseminating relevant scientific research, technical assistance and information about funding opportunities for regional planning and hazard mitigation projects.

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

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

Contextual measure	Number of communities
Number of communities in the coastal zone required by state law or policy to implement setbacks, buffers, or other land use policies to direct develop away from hazardous areas.	75
Number of communities in the coastal zone that have setback, buffer, or other land use policies to direct develop away from hazardous areas that are more stringent than state mandated standards or that have policies where no state standards exist.	Data not available – As part of its 'Getting to Resilience' questionnaire, the NJCMP is commencing outreach efforts to local municipalities to develop inventories of local plans and ordinances relevant to coastal hazard issues.

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

Contextual measure	Number of communities
Number of communities in the coastal zone that are required to develop and implement land use policies to direct development away from hazardous areas that are approved by the state through local comprehensive management plans.	n/a
Number of communities that have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas.	Unknown – NJ has state regulations that guide development with 150' of the land water interface of any tidal watercourse or the landward edge of a beach or dune. This does not address other 'hazardous areas'

Priority Needs and Information Gaps

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

Gap or need description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H,M,L)
Cost Benefit Analysis of present and future development in coastal hazard areas under various climate change/sea level rise scenarios. As noted in this section, New Jersey's already highly developed coastline is	Research data	H -– There are a number of ongoing studies being conducted by academia. These studies are looking at various economic sectors and the impact of climate change on their

continuing to experience population growth. Simultaneously, climate change is posing a greater risk to coastal communities. An analysis of the short and long-term economic gains and costs of existing and future development in high hazard coastal areas would inform future decision-making and identify measures to reduce the threat to life and property along the New Jersey shore.		sustainability. Future research is planned to specifically identify the impact of coastal climate change/hazards on the sectors found in the coastal zone.
Analysis of potential insurance industry policy changes in high risk areas in NJ's coastal zone. As New Jersey attempts to understand the economic risks and benefits of coastal development and redevelopment, it will be important to understand the impacts of changes to economic drivers such as the insurance industry.	Research, data, policy	M
Statewide Adaptation Plan addressing coastal hazards under various climate change and sea level rise scenarios. A statewide adaptation plan will be critical to meeting the objectives of this enhancement area, including anticipating and managing the effects of potential sea level rise.	Regulatory, policy, communication and outreach	H
Education on the costs, risks and hazards associated with living in coastal New Jersey. A critical part of coastal zone management, especially in high risk areas, is education of residents and visitors so that they may make informed choices.	Education	H

Enhancement Area Prioritization

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

High _____
Medium __X___
Low ___ ___

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

In this assessment, the enhancement area has been given a medium ranking. This revised ranking does not diminish the enhancement area's greater priority for overall management of the coastal zone. The Coastal Management Office will continue working on the issues with a focus

on sea level rise vulnerability, impacts, management, policy, adaptation and education. The Coastal Management office will also begin the research necessary to address the gaps and needs described above in coordination with the Department's Office of Climate and Energy and other partners including the JCNERR, NJ Sea Grant Consortium, individual National Estuary Programs and academia.

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

Yes	_____
No	X

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

A strategy for this enhancement area will not be developed. The tasks associated with Coastal Hazards under the current 309 Enhancement Strategy (2006-2011) will be completed and will provide a framework for implementation of actions. Additionally partnerships have been developed with academia, the NJ Sea Grant Consortium, the Jacques Cousteau National Estuarine Research Reserve and other federal and state programs to address education and outreach, facilitate capacity building at the local level and to implement management measures to address coastal hazards. Work specific to the development of wetlands restoration and adaptation in response to sea level rise and coastal hazards will be addressed in the strategy proposed for the Wetlands enhancement area and the Barnegat Bay SAMP proposed in this 309 Enhancement strategy.

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.

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

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

Geographic area	**Type of growth or change in land use**	**Rate of growth or change in land use** (% change, average acres converted, H,M,L)	**Types of CSI**
Ocean County	Urbanization Population gain	H	Forest fragmentation Water quality degradation Habitat loss
Atlantic County	urbanization Population gain	H	Forest fragmentation Water quality degradation Habitat loss
Monmouth County	Urbanization Population gain	H	Forest fragmentation Water quality degradation Habitat loss
Burlington County	Urbanization Population gain	H	Forest fragmentation Water quality degradation Habitat loss
Gloucester County	Urbanization Population gain	H	Forest fragmentation Water quality degradation Habitat loss

New Jersey continued to experience population growth during this assessment period. The state remains the most densely populated in the country, with an estimated population of 1,174 people per square mile. Between 2000 and 2009, Ocean County had the largest population gain, a 12.3% increase. Population gains also exceeded 5% in the coastal counties of Atlantic, Burlington, Cumberland, Gloucester, Middlesex, and Somerset, Counties. In contrast, the population of Cape May County decreased by more than 5%. According to the April 2010 report *New Jersey*

Economic Indicators (New Jersey Department of Labor and Workforce Development, Division of Labor Market and Demographic Research), all counties gained in international immigration but some counties saw a loss due to domestic migration between 2008 and 2009. The report found that the coastal counties of Atlantic, Monmouth and Ocean had the largest population growth and highest growth rate in the 2000 to 2009 period. Another indicator of growth is the number of residential building permits authorized each year. In every coastal county, there has been a reduction in number of building permits between 2006 and 2009, with an overall reduction from 31,228 in 2006 to 11,021 in 2009 in coastal counties. In fact, in 2008, the number of new residential units authorized to be built statewide (18,363) was the lowest since 1991. That number dropped to 12,235 units in 2009.

A report released in July 2010 by John E. Hasse and Richard G. Lathrop, *Changing Landscapes in the Garden State: Urban Growth and Open Space Loss in NJ 1986 thru 2007* (available at http://www.crssa.rutgers.edu/projects/lc/download/urbangrowth86_95_02/HasseLathrop_njluc_final_report_07_14_08.pdf) uses New Jersey Land Use/Land Cover data to evaluate changes in New Jersey's landscape between 1986 and 2007. While urban growth occurred in all counties, data indicate that in the time period 2002-2007, the above counties were "urban growth hot spots." Atlantic, Burlington, Monmouth and Ocean Counties lost more than 600 acres each of upland forest per year in that time period.

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

Sensitive resources	**CSI threats description**	**Level of threat** (H,M,L)
Upland forests and critical wildlife habitat	Conversion of forest and critical wildlife habitat to developed land resulting in fragmentation of large contiguous forested areas and loss in value as wildlife habitat	H
Barnegat Bay	The Barnegat Bay Estuary watershed encompasses most of the 33 municipalities in Ocean County as well as four municipalities in Monmouth County. The Barnegat Bay Estuary's 75-square mile environmentally sensitive estuarine system, consists of aquatic vegetation, shellfish beds, finfish habitats, waterfowl nesting grounds, and spectacular vistas as well as a population of more than 500,000 people, which more than doubles during the summer season. The Barnegat Bay has been the subject of extensive study and debate. Identified as a Geographic Area of Particular Concern in the 1980 NJCMP's Final Environmental Impact Statement, the Barnegat Bay was designated an estuary of national significance in 1995 and has since been the focus of study. Ecological	H

	problems have been observed, but proven difficult to identify and quantify. While there is agreement that the health of the Bay is in decline there are different strategies being proposed to protect and restore the Bay. The impacts of nitrogen and phosphorous input into the Bay from land use development pressure, hydrologic circulation and the cooling system discharges at the Oyster Creek nuclear power plant is a significant concern.	
Wetlands	Loss of coastal wetlands to erosion and inundation (as sea level rises and land subsides). Wetland health is also impacted by increased upland development and stormwater and overland runoff.	H

Management Characterization

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

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

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

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

a) Characterize significant changes since the last assessment;

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

c) Characterize the outcomes and effectiveness of the changes.

Regulations

Water Quality Management Planning **r**ules

a) On July 7, 2008, the NJDEP readopted the Water Quality Management Planning rules N.J.A.C. 7:15 with amendments and new rules. The Water Quality Management Planning rules, N.J.A.C. 7:15, primarily implement section 208 of the Federal Clean Water Act and the New Jersey Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq., whose purpose is to maintain, and where attainable, restore the chemical, physical and biological integrity of the surface and ground water resources of the State. Accordingly, the rules prescribe water quality management policies, procedures and standards which protect public health; safeguard fish, aquatic life, and scenic and ecological values; and enhance domestic, municipal, recreational, industrial and other uses of water. The area wide Water Quality Management Plans called for by the rules are umbrella plans covering the entire State, each with various adopted components that address different aspects of water resource planning. For example, Wastewater Management Plans are a component of the area wide Water Quality Management Plans. The individual components are adopted into the appropriate area wide Water Quality Management Plans in order to give them effect. In addition, Wastewater Management Plans provide the vehicle through which the NJDEP establishes a regulatory program for the control of nonpoint sources of pollution, as required by the Water Quality Planning Act. Significant among the changes to the rules is the elimination of conflicts between future sewer service areas and environmentally sensitive areas including: threatened and endangered species habitats and Natural Heritage Priority Sites and the Coastal Fringe, Coastal Rural and Coastal Environmentally Sensitive Planning Areas identified by New Jersey's Coastal Management Program. Also significant to this assessment of the coastal program is a new requirement that a septic system management plan be developed and implemented for areas of the State served by individual sub-surface disposal systems, which satisfied the last outstanding requirement of section 6217 of the Federal Coastal Zone Management Act.

b) These changes were not driven by 309 or other CZM changes or efforts. Documenting compliance with the requirements of the Coastal Non-Point Source Pollution Control Program was funded by section 306.

c) The changes are anticipated to improve water quality management planning and protection of New Jersey's water resources. However there have been delays in implementation since their adoption.

Flood Hazard Area Control Act **r**ules

a) The NJDEP adopted new Flood Hazard Area Control Act rules (N.J.A.C. 7:13), as well as related amendments to the Coastal Permit Program rules (N.J.A.C. 7:7) and the Coastal Zone Management (CZM) rules (N.J.A.C. 7:7E), in order to incorporate more stringent standards for development in flood hazard areas and riparian zones adjacent to surface waters throughout the State. The new Flood Hazard Area Control Act rules expand the preservation of near-stream vegetation (previously protected within 25 or 50 feet of streams) by implementing new riparian zones that are 50, 150 or 300 feet in width along each side of surface waters throughout the State. The riparian zone width depends on the environmental resources being protected, with the most protective 300-ft riparian zone applicable to waters designated as Category One and certain upstream tributaries. Certain waters supporting trout, or habitats of threatened or endangered species critically dependant on the watercourse to survive, or watercourses which flow through areas that contain acid-producing soil deposits, receive a 150-ft riparian zone. NJDEP also amended the coastal rules to incorporate the new flood hazard area and riparian zone standards

into the review of all CAFRA and Upland Waterfront Development permits, thereby eliminating a gap in the previous rules under which development in tidal areas was not reviewed under the same standards that applied to non-tidal areas.

b) These changes were not driven by 309 but were funded in part by 306.

c) The NJDEP adopted these new rules in order to better protect the public from the hazards of flooding, preserve the quality of surface waters, and protect the wildlife and vegetation that exist within and depend upon such areas for sustenance and habitat.

CZM rules

a) In April 2008, NJDEP adopted amendments to the CZM rules that update the goals of New Jersey's Coastal Management Program. The revised coastal goals are enforceable policies under New Jersey's coastal permitting program, having been incorporated into the program in June 2009. The coastal goals and supplemental policies include healthy coastal ecosystems; effective management of ocean and estuarine resources; and safe, healthy and well-planned coastal communities and regions.

b) This was a 309 driven change.

c) The NJCMP and CZM rules were founded on broad coastal goals.. The refined coastal goals encompass one or more of the "eight basic coastal policies" which were part of the CZM rules since they were promulgated in 1978. Each coastal goal is accompanied by related policies that set forth the means to accomplish that particular goal. By providing greater detail, State and local government agencies as well as the general public, will have a better understanding of each goal and the means that may be employed to attain the goal.

Policies

The revised goals described above are enforceable policies of the NJCMP.

State Development and Redevelopment Plan

a) The 1993 amendments to the Coastal Area Facility Review Act (CAFRA) required that the rules adopted to implement those amendments be closely coordinated with the State Development and Redevelopment Plan (State Plan). In addition, the 1993 legislation amended the State Planning Act to allow the State Planning Commission (SPC) to adopt the coastal planning policies of the NJDEP's coastal rules as the State Plan in the CAFRA area. In response, the NJDEP adopted new rules for determining impervious cover and vegetative cover limits for sites in the CAFRA area based on State Planning concepts that encourage development in areas with existing development and infrastructure, discourage sprawl development, and protect sensitive natural resources. Since the State Planning rules were first adopted, the State Plan process has under gone changes that provide for a more comprehensive planning analysis, resulting in the current Plan Endorsement process. The Plan Endorsement Process under which the State Planning Commission designates centers provides the mechanism for determining whether a particular center is capable of accommodating the long-term growth and development needs of a community while safeguarding the coastal resources of the CAFRA area. Through the plan endorsement and CAFRA center approval processes, municipalities work with the NJDEP and other state agencies through the plan endorsement process.

b) These changes were driven by in part by 309, as they relate to the CAFRA Planning Map.

c) Through the plan endorsement and CAFRA center approval processes, municipalities work with the NJDEP and other state agencies to delineate appropriate growth centers, and develop and implement plans and ordinances that protect coastal resources.

Transfer of Development Rights

a) The authority to transfer development rights was provided to municipalities with signing of the State Transfer of Development Rights Act in March 2004. Transfer of Development Rights is a realty transfer system where development potential in a specified preservation area can be purchased by private investors for use in a targeted growth area. In exchange for a cash payment, landowners in the preservation area place a restrictive easement on the property that will maintain the resource into perpetuity. The land in the designated receiving area can then be developed at a higher density than allowed under the baseline zoning. This process reduces the consumption of our critical resources, while still accommodating growth, and eliminates the "windfalls and wipeouts" in property values normally associated with zoning changes. (see the New Jersey Department of Community Affairs website
http://www.state.nj.us/dca/divisions/osg/programs/tdr.html)

b) These changes were not driven by 309 or other CZM changes or efforts.

c) Transfer of Development Rights is anticipated to provide municipalities with a mechanism to preserve environmentally sensitive lands.

Management Plans

a) The New Jersey Meadowlands Commission (NJMC) adopted the *NJMC Master Plan*, which sets forth revisions to its original master plan for the Hackensack Meadowlands District on January 8, 2004. The *NJMC Master Plan* presents a cohesive set of planning principles and standards adopted by the NJMC to guide future development while protecting the resources of the District. In conjunction with the adoption of the *NJMC Master Plan*, the NJMC adopted revisions to the District Zoning Regulations, N.J.A.C. 19:4, on January 8, 2004. These revisions became effective on February 17, 2004, the same date as the *NJMC Master Plan*. The District Zoning Regulations were readopted with amendments on January 20, 2009, which became effective on that date. The policies and principles of the *NJMC Master Plan* are effectuated through the District Zoning Regulations. In November 2009, those portions of the *NJMC Master Plan* and Zoning Regulations most relevant to management of New Jersey's coastal resources were incorporated into New Jersey's Coastal Management Program.

b) These changes were not driven by 309. Incorporation of the changes into New Jersey's Coastal Management Program was funded through 306.

c) These changes update New Jersey's policies regarding development in the Hackensack Meadowlands District, which seek to avoid, or minimize and mitigate for, any adverse effects to coastal resources, and coastal water quality, and ensures that these policies are enforceable through the Coastal Management Program.

Research, assessment, monitoring

Ecosystem Assessment of the Barnegat Bay and Little Egg Harbor Estuary

a) Researchers from the Rutgers University Institute of Marine and Coastal Studies in collaboration with the NJDEP have been working on an ecosystem assessment of the Barnegat Bay and Little Egg Harbor Estuary. The study's purpose is to evaluate how ecological conditions in the estuary are affected by human stressors. The study measures many key water quality parameters such as dissolved oxygen, chlorophyll A, and turbidity or water clarity. However, the

unique feature of this study is the focus on a bioassessment in addition to the physical and chemical attributes. The study has developed biological parameters such as seagrass density, the extent of algae and phytoplankton blooms, and the health of benthic invertebrate communities to measure impacts on the estuary to enable cause and effect studies such as the response of the estuary's biology to nutrient inputs. These studies are establishing a new framework for determining the health of the estuary and effective management.

The Barnegat Bay Partnership, formerly the Barnegat Bay National Estuary Program, has funded many scientific studies to assess and monitor elements of the estuary such as shellfish, water quality, bacterial sources, fish and shellfish reproduction, submerged aquatic vegetation, and sea nettle polyps. Some studies are focused on generating a greater scientific understanding of life cycles and reproductive success; others fall into more of an applied research category such determining the impact of artificial shoreline on species diversity. Wetland monitoring and assessment initiatives are addressed in the Wetlands assessment (see page 83).

b) The development of a statewide coastal wetland monitoring strategy has in part been driven by CZM section 309 grant tasks under the wetlands and coastal hazards issue areas. The other changes were not driven by 309 or other CZM changes or efforts.

c) The results of these studies are being presented at stakeholder meetings and the data and conclusions may be used to inform policy and management decisions such as how to regulate nutrient inputs and other human impacts and activities. Development of a wetland assessment program is intended to improve regulatory and non-regulatory decision-making processes for increased protection of the state's wetland and water resources, as well as to achieve improved protection of rare plant and animal species.

Changing Landscapes in the Garden State

a) John E. Hasse and Richard G. Lathrop released the report *Changing Landscapes in the Garden State: Urban Growth and Open Space Loss in NJ 1986 thru 2007* in July 2010. The report is available at http://www.crssa.rutgers.edu/projects/lc/download/urbangrowth86_95_02/HasseLathrop_njluc_final_report_07_14_08.pdf). Hasse and Lathrop used New Jersey's Land Use/Land Cover data to evaluate changes in New Jersey's landscape between 1986 and 2007. This data is based on aerial photography dating from 1986, 1995, 2002 and 2007. The report analyzes changes in six broad categories of land use/land cover (urban, agriculture, forest, water, wetlands, barren) with a more detailed analysis of certain land use changes, including forest, wetlands, and agricultural land.

b) These changes were not driven by 309 or other CZM changes or efforts.

c) This study provides valuable information regarding the nature and extent of land use changes and where they are concentrated in the State.

Priority Needs and Information Gaps

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

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Means to address cumulative impacts to NJ's bays and ocean	Regulatory, policy	H- this is critical to addressing the enhancement objective; will be addressed under other 309 strategies including SAMP, Wetlands and Ocean/Great Lakes strategies
Methods and monitoring to assess cumulative impact of land use change	Data, capacity	M- this is a key means of data tracking to meet the main objective of this enhancement area
Regulations to impose restrictions on cumulative land use change	Regulatory, policy	L- it is anticipated that the objectives of this enhancement area can be met without imposing new regulations
Means to address hardening of shorelines	Regulatory, policy	M- this is a moderately important gap that will be addressed in the Wetlands and SAMP enhancement area strategies
Inclusion of coastal standards in the State Plan	Regulatory, policy	M
Economic value of existing uses of coastal resources	data	M- this is a moderately important gap that will be addressed under other 309 strategies
Clear understanding of cumulative impacts	capacity	H- this is critical to addressing the enhancement objective that will be addressed under other 309 strategies

Enhancement Area Prioritization

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

High _____
Medium _____
Low ___X__

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

Although these issues are important to the Coastal Management Program, they will be addressed under other enhancement areas, as discussed below.

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

Yes _____
No ____X_

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

While no strategy is being developed for this enhancement area, cumulative and secondary impacts will be addressed under other 309 strategies. Specifically, the Coastal Management Office has determined that comprehensive planning and the address of the cumulative and secondary impacts of development in the Barnegat Bay would be well suited to a SAMP and has developed a strategy for a Barnegat Bay SAMP. Comprehensive planning for the ocean is addressed under the strategy for Ocean Resources and hardening of shorelines and the implementation of other climate adaptation strategies can be addressed under the Barnegat Bay SAMP as well as the Wetlands strategy. The aforementioned enhancement strategies will take into consideration the cumulative and secondary impacts of development as management and resource conservation actions are developed.

Energy & Government Facility Siting

Section 309 Enhancement Objectives

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

Resource Characterization

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

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

Type of Energy Facility	**Exists in CZ** (# or Y/N)	**Proposed in CZ** (# or Y/N)	**Interest in CZ** (# or Y/N)	**Significant changes since last assessment** (Y or N)
Oil and gas facilities	Y	N	N	N
Pipelines	Y	Y	Y	N
Electric transmission cables	Y	Y	Y	
LNG	N	1	Y	Y
Wind	Y	Y	Y	Y
Wave	N	N	Y	N
Tidal	Y*	Y	Y	N
Current (ocean, lake, river)	N	N	N	N
OTEC	N	N	N	N
Solar	Y	Y	Y	Y
Nuclear	Y	Y	Y	Y
Cogeneration	Y	N	Y	N
Coal	N	Y	N	Y
Other (please specify)				

*prototype only

Type of Energy Facility	**Exists in Federal Waters** (# or Y/N)	**Proposed in Federal Waters** (# or Y/N)	**Interest in Federal Waters** (# or Y/N)	**Significant changes since last assessment** (Y or N)
Oil and gas facilities	N	N	Y	Y
Pipelines	N	Y	Y	N
Electric transmission cables	N	N	Y	Y
LNG	N	1	2	Y
Wind	N	Y	Y	Y
Wave	N	N	N	N
Tidal	N	N	N	N
Current (ocean, lake, river)	N	N	N	N
OTEC	N	N	N	N
Other (please specify)				

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

Since the previous assessment there has been a great deal of interest in energy facility siting in New Jersey. The interest has ranged from Liquefied Natural Gas (LNG) facilities, to wind turbines and other renewable energy facilities, to coal fired plants with carbon capture and sequestration. The coastal zone with it dense population, high energy demands and congested transmission capacity is considered a prime market to site new energy facilities. The production, distribution, and use of energy, unless wisely managed, can threaten the economy of this State, air and water quality, and human health. Since the last assessment there have been four proposed LNG facilities, both onshore and as deepwater ports in federal waters; numerous wind turbine proposals both onshore, within state waters and in federal waters; and many solar panels installed on buildings and residential housing. In April 2010, Governor Chris Christie articulated the administration's opposition to LNG facilities off the New Jersey coastline.

Offshore Wind

In October 2007, the New Jersey Board of Public Utilities (BPU) issued a solicitation for proposals to develop offshore wind energy facilities and awarded a grant of $4 million to Garden State Offshore Energy to install, as a pilot, an aggregate capacity of up to 350 megawatts (MWs) in offshore renewable wind electricity generating technology. This solicitation was done in parallel with the Ecological Baseline Studies discussed in the Ocean Resources assessment (see page 60). New Jersey's new Energy Master Plan (EMP) was released in October 2008 with a goal of installing at least 1000 MWs of offshore wind by 2012 and at least 3000 MW by 2020. In response to the EMP's offshore wind goals, the BPU approved a stakeholder process for rulemaking on a proposed offshore wind Renewable Portfolio Standard. Based on the need to develop programs to achieve the offshore wind goals in the EMP, and as a result of stakeholder comment and feedback, BPU developed a proposal for a rebate program that would support multiple simultaneous projects, directed at the construction of meteorological stations to gather the necessary data for the development of at least 1,000 MW of offshore wind. New Jersey is at the forefront of offshore wind development with three offshore wind development companies

obtaining the first interim leases under the Federal Bureau of Ocean Energy Management, Regulation and Enforcement (BOEM), formerly the Minerals Management Service, leasing program. Additionally, BPU developed a rebate program that will provide rebates of up to $4 million for the installation of meteorological towers associated with these leases. Although there is a great deal of interest in siting large numbers of wind turbines offshore, there has also been limited interest in siting large scale turbines onshore, typically one to two turbines on a site. New Jersey's limited onshore wind resource and many highly developed urban areas limit the interest and practicality of siting turbines onshore. There has also been a growing concern from citizens regarding siting onshore as more wind developments are being proposed near residential developments. A number of residential scale turbines have also been constructed recently within the state.

The EMP also calls for extensive use of solar energy in New Jersey, specifically 1800 MW of solar energy production by 2020. This goal has led to incentive programs and an increase in the installation of solar energy projects.

Offshore Oil and Gas

As noted in the Ocean Resources assessment, the regions offshore of New Jersey no longer fall under either Presidential or Congressional moratoria. The Department of the Interior announced in March 2010 its intent to expand oil and gas development and exploration on the U.S. Outer Continental Shelf (OCS), into the Mid and North Atlantic Planning Areas, and included a lease sale offshore of Virginia in the current OCS Program. BOEM has begun the scoping process for the 2012-2017 Program to include these areas. On March 31, 2010 Governor Chris Christie issued a statement on this proposed expansion, indicating that he opposes drilling off the coast of New Jersey and further stating "New Jersey's coastline is one of our economic engines and I would have to be really convinced of both the economic viability and environmental safety of oil and gas exploration off our coast. At this point, I'm not convinced of either."

Nuclear, coal, and wave energy facilities

New Jersey's four nuclear power plants generated about 32,000 gigawatt-hours (GWh) of energy in 2007. All are located in the coastal zone. Public Service Electric and Gas, which operates three of the plants, has filed for a permit with the U.S. Nuclear Regulatory Commission as a first step toward the construction of its fourth plant at its Salem County site.

A new coal fired power plant is proposed along the Arthur Kill in Linden, New Jersey. The proposal calls for construction of a 500 MW power plant that will pressurize rather than burn coal and pipe carbon dioxide emitted to be sequestered offshore under the sea floor.

A prototype wave energy buoy was deployed in the Atlantic Ocean offshore New Jersey for ocean testing during the assessment period. The buoy was developed with support from the U.S. Navy and the New Jersey Board of Public Utilities. However, the demonstration project has been completed and the buoy is no longer deployed in New Jersey's ocean waters.

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

Based on 2005 U.S. Census data, 70% of New Jersey households heat their homes with natural gas. According to the EMP, if no action steps are taken, and the "business as usual" scenario is pursued, in 2020 New Jersey's homes and businesses will use 97,800 GWh of electricity and over 542 trillion BTUs of natural gas and heating oil at a cost of $30.7 billion. If the EMP is fully implemented, by 2020 New Jersey's homes and businesses will use 78,300 GWh of electricity

and approximately 443 trillion BTUs of natural gas and heating oil, and save more than $30 billion in its total annual energy expenditures between 2010 and 2020.

In 1990, power plants fueled by natural gas accounted for about 33% of New Jersey's electric generation capacity; by 2006, that share had grown to about 55%. Those plants not only account for a larger share of the generation capacity, but also generate a larger share of New Jersey's electricity. Natural gas generation facilities accounted for 17.3% of the State's total electricity generation in 1990, and 25.8% in 2006. Fossil fuel-based generation would decrease from 50% in 2004 to 43% of the State's total electricity generation under the EMP. Combined heat and power, a more efficient form of generation that uses natural gas would account for 30% of the fossil fuel based generation.

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

Several state agencies in New Jersey have programs that support the development of alternative and renewable energy. The advancement of renewable energy in the State has been a top priority across administrations. Most recently, the new gubernatorial administration created an Assistant Commissioner for Green Energy position within the NJDEP, highlighting the continued commitment to the advancement of renewable energy and the accompanying economic benefits of attracting new jobs and development to the State tied to this industry. Additionally, the NJDEP's Commissioner serves on the BOEM's New Jersey state wind task force as well as the federal Atlantic States Wind Consortium.

<u>New Jersey Energy Master Plan</u>
The EMP released in October 2008 establishes the following targets:

- Develop solar energy goal of 2,120 GWh by 2020. This would result in the development of 1800MW of solar energy capacity.
- Develop New Jersey's wind energy resources, including at least 1000 MW of offshore wind by 2012, 3000 MW of offshore wind and at least 200 MW of onshore wind by 2020.
- Develop 900 MW of biofuels and biomass, not involving incineration, as part of the State's 2020 RPS.
- Increase support for other renewable energy technologies including a 50 MW carve out for "new and emerging technologies."

The EMP establishes the following goals:

- Maximize the State's energy conservation and energy efficiency to achieve reductions in energy consumption of at least 20% by 2020 resulting in a reduction in our current energy consumption.
- Reduce peak demand for electricity by 5,700 MW by 2020.
- Stimulate growth in renewable and alternative energy technologies by pursuing action items that may result in New Jersey producing 30% of its energy supply from renewable energy sources by 2020.
- Develop a 21st century energy infrastructure that is responsive to the goals and action items in this plan, ensures the reliability of the system, and makes available additional tools to consumers to manage their energy consumption.
- Invest in innovative clean energy technologies, businesses and workforce to stimulate the growth in the clean energy industry in New Jersey.

The EMP provides the State with a road map to securing a clean, reliable and affordable energy future. This alternative plan is expected to save consumers $6.4 billion in 2020 and $30 billion between 2010 and 2020. This plan will also result in an investment of approximately $33 billion by 2020 into our energy infrastructure, which will result in the creation of approximately 20,000 jobs by 2015. In addition, based on current projections and assuming that all aspects of this plan are fully implemented, this plan will result in reducing carbon dioxide emissions to 56.1 million metric tons in 2020, compared to 84 million metric under business-as-usual conditions. This is almost 23% lower than the 72.8 million metric tons emitted in 1990. Together, these efforts will strengthen New Jersey's economy by reducing consumers overall energy expenditures, while creating jobs, improving the current energy infrastructure and meeting our environmental goals. The Plan offers aggressive policies that create an energy system that is responsible and will establish the clean energy industry as a major part of New Jersey's economy. The EMP is currently undergoing review.

Board of Public Utilities

The BPU regulates electric utilities. The BPU has no direct authority over the wholesale electricity markets or the electric transmission operated by PJM (the regional transmission organization), but can advocate for New Jersey's interests before PJM and the Federal Energy Regulatory Commission. The BPU oversees the basic generation service auction through which the utilities obtain contracts for supplies to serve customers who do not shop for their own power supplies. The BPU also administers the Clean Energy Program, which supports the development of renewable energy and the enhancement of energy efficiency through regulatory programs and financial assistance.

Through the BPU's New Jersey Clean Energy Program, the State has been investing in energy efficiency and renewable energy projects with tremendous success. This program is currently funded by a societal benefits charge that is placed on consumers' electricity and natural gas bills. The Clean Energy Program reinvests these dollars into energy efficiency and renewable energy projects. Between 2001 and 2007, the New Jersey Clean Energy Program assisted in avoiding 1,428 GWh of electricity consumption, and 3.1 trillion BTUs of natural gas usage. These savings were broken down between the following electricity consumer groups: 64.5% of the electricity savings and 32.2% of the natural gas savings were through the commercial and industrial energy efficiency program; 35.5% of the electricity savings and 67.8% of the natural gas savings were through the residential energy efficiency program.

Economic Development Authority

The BPU and the New Jersey Economic Development Authority (EDA) have combined their technical and financing expertise to make funding available through New Jersey's Clean Energy Program for energy efficiency and renewable energy projects in New Jersey. This initiative is designed to make it more affordable and cost effective for businesses to make investments in renewable energy systems and energy efficient equipment. This program is designed to encourage businesses to invest in the best-performing equipment, which will realize substantial energy cost savings as well as environmental benefits through the use of the cleanest forms of energy. Grants and financing are available to encourage the development of large-scale renewable energy facilities larger than 1 MW. Renewable energy includes the use of: wind, solar power (photovoltaics), landfill gas, digester gas and methane from sustainable biomass to generate clean electricity. Grants are available for up to 20% of eligible project development costs. The EDA may arrange long-term, low-interest rate bonds or loans to provide affordable financing for the balance of project costs. Borrowers are required to make a minimum 10% equity contribution to the project.

Offshore Renewable Energy Certificates

On August 19, 2010, Governor Chris Christie signed the Offshore Wind Economic Development Act. The legislation will establish an offshore wind renewable energy certificate program (OREC) and will make available financial assistance and tax credits from existing programs for businesses that construct manufacturing, assemblage and water access facilities to support the development of qualified offshore wind projects. The legislation directs the BPU to develop an OREC program that calls for a percentage of electricity sold in the state to be from offshore wind energy. This percentage would be developed to support at least 1,100 megawatts of generation from qualified offshore wind projects. Through the legislation, the EDA will provide financial assistance to qualified offshore wind projects and associated equipment manufacturers and assembling facilities.

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

Fort Monmouth

On August 24, 2005 the Base Closure and Realignment Commission endorsed the recommendations made by the Department of Defense to close Fort Monmouth. Those recommendations became effective November 9, 2005 according to the Base Realignment and Closure Act of 1990. Accordingly, Fort Monmouth will close no later than September 15, 2011. The majority of the organizations and personnel positions now operating at Fort Monmouth will re-locate to Aberdeen Proving Ground, Maryland and Fort Belvoir, Virginia.

LORAN

The Loran Support Unit (LSU) is the Coast Guard's and United States' pioneer and specialist in Long Range Navigation (LORAN) equipment support and systems management. The LSU resides on approximately 360 acres at the southernmost portion of what used to be the Coast Guard Electronics Engineering Center. The LSU is located adjacent to the Atlantic Ocean on one of the barrier islands along the peninsular southern tip of the State of New Jersey just north of Cape May. As a result of technological advancements during the last 20 years and the emergence of the U.S. Global Positioning System, U.S. LORAN-C is no longer required by the armed forces, the transportation sector or the nation's security interests, and is used by only a small segment of the population. In accordance with the Department of Homeland Security Appropriations Act, the U.S. Coast Guard will terminate the transmission of all U.S. LORAN-C signals effective February 2010. At that time, the U.S. LORAN-C signal will be unusable and permanently discontinued. No plans have been finalized for the property or tower located on site.

Management Characterization

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

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

Energy Use rule, N.J.A.C. 7:7E-7.4

Energy facilities include facilities, plants, or operations for the production, conversion, exploration, development, distribution, extraction, processing, or storage of energy or fossil fuels. Energy facilities also include onshore support bases and marine terminals. Energy facilities do not

include operations conducted by a retail dealer, such as a gas station, which is considered a commercial development.

The rule contains standards that apply to all new energy facilities as well as specific standards relevant to OCS oil and gas exploration and development, onshore support bases, platform fabrication yards and module construction, repair and maintenance facilities, pipe coating yards, pipelines and associated facilities, gas separation and dehydration facilities, gas compressor stations, gas pigging facilities, gas processing plants, other gas-related facilities, oil refineries and petrochemical facilities, storage of crude oil, gases and other potentially hazardous liquid substances, tanker terminals, electric generating stations (including fossil fuel, nuclear and renewable), and LNG facilities. These standards may include setbacks, buffers (visual, sound, vegetative), compatible siting locations such as industrial or port locations and other standards specific to the type of energy facility proposed.

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

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

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

a. Characterize significant changes since the last assessment;

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

c. Characterize the outcomes and effectiveness of the changes.

Statutes or regulations

Solar panel impervious surface legislation

a) During this assessment period, legislation was introduced that would exempt solar panels from being designated as an impervious surface or impervious cover, as it applies to the various laws relating to municipal land use, stormwater management, and the Highlands, including agricultural development therein. Under the bill, a solar panel is defined as a panel or plate, or a canopy or array thereof, that collects or captures solar energy or radiation to provide energy or power, and includes nocturnal heat radiation, flat plate or focusing solar collectors, and photovoltaic solar

cells, and excludes the base or foundation of a panel, plate, canopy, or array. The bill was signed into law on April 22, 2010 as P.L.2010, CHAPTER 4.

b) This change was not driven by 309 or other CZM changes or efforts.

c) By exempting solar panels from the definition of an impervious surface, the law eliminates certain requirements applicable to various development and management plans, thus facilitating the siting of solar panels.

Solar and Wind Turbine enforceable policy changes

a) On September 7, 2010, the NJDEP published in the New Jersey Register the adoption of amendments to the Coastal Permit Program rules, CZM rules and Flood Hazard Area Control Act rules that were proposed on September 8, 2009. The adopted amendments to the Coastal Permit Program rules add a new permit-by-rule and two new coastal general permits for the construction of wind turbines on land; add a new permit-by-rule for the construction of solar panels; and describe the situations in which construction of a wind turbine or solar panel does not require a coastal permit. The adopted amendments to the CZM rules modify setbacks for wind and solar development, identify particular areas where construction of large scale wind turbines would not be appropriate, and set forth monitoring, habitat evaluation and impact assessment requirements for birds, bats and marine organisms. The adopted amendments also allow the construction of a demonstration wind energy facility in the ocean waters of the State to assist in assessing the impacts of such a facility. The adopted amendments to the Flood Hazard Area Control Act rules, N.J.A.C. 7:13, add a new permit-by-rule for the construction of wind turbines on land.

b) This was a 309 driven change.

c) The adopted new rules and amendments will facilitate the development of renewable energy sources in the coastal zone in appropriate locations and that will move the State closer toward meeting the goals of New Jersey's EMP.

Policies

The State's 2008 EMP focuses on energy conservation and energy efficiency to achieve reductions in energy consumption as well as stimulating growth in renewable and alternative energy technologies. The EMP is now under review. Please see the discussion regarding the EMP above.

Program Guidance and Mapping

a) As part of the NJDEP's efforts to streamline the development of renewable energy in the proper locations, the NJDEP adopted the "Technical Manual for Evaluating Wildlife Impacts of Wind Turbines Requiring Coastal Permits." this technical manual serves as program guidance for applicants in order to clarify the studies that are required as part of a wind project. Coastal Management Office staff worked closely with the NJDEP's Fish and Wildlife Service Endangered and Non-game Species Program and the Office of Science throughout the proposal and adoption process. The technical manual was proposed in draft in September 2009 in order to add clarity for applicants prior to applying for permits. The final technical manual was adopted on September 7, 2010. Another tool developed as part of the wind and energy rules is the NJDEP Large Scale Wind Turbine Siting Map, which is available as a GIS layer.

b) This GIS layer was developed by the NJDEP's Endangered and Non-game Species Program and accompanied the rule proposal and was part of a 309 driven change.

c) This mapping effort will protect sensitive avian species and provide predictability to wind facility developers by identifying land areas where large scale wind turbines are unacceptable due to operational impacts to birds and bats.

Research, assessment or monitoring

Ecological Baseline Study
The NJDEP conducted an extensive Ecological Baseline Study of a 1300 square mile area offshore New Jersey in the past two years, as described in the Ocean Resource assessment (see page 60).

New Jersey Audubon Study
a) New Jersey Audubon Society (NJAS) is engaged in a post-construction wildlife monitoring study conducted at the Jersey Atlantic Wind, LLC /Atlantic County Utilities Authority wind power facility. NJAS is monitoring bird and bat flight patterns using a dual marine radar system, collecting data (i.e., horizontally- and vertically-oriented) 24 hours/day. NJAS will be doing an analysis of data collected between sunset and sunrise during "migration" periods (i.e., 16 Mar – 31 May, 16 Jul – 15 Dec) and between sunrise and sunset during the "breeding" and "winter" periods. During the winter period, NJAS collects radar data two days/week, on average, while during the spring migration period they collect data an average of five days/week. NJAS collected data two days/week, on average, during the breeding season and five days/week, on average for the remainder of the reporting period, which encompassed the beginning of the fall migration period. NJAS is also involved in monitoring evidence of bird and bat collisions with wind turbines onsite. As part of their study, NJAS conducts systematic searches three days per week on the Atlantic County Utilities Authority facility for bird and bat carcasses to document mortality due to interaction with on-site wind turbines. Searches were conducted around each turbine by a single, trained NJAS staff person. NJAS also monitors temporal and spatial bird abundance and distribution patterns by conducting randomly sampled point counts to determine abundance and distribution of residents and transient birds.

b) This change was not driven by 309 or other CZM changes or efforts.

c) The outcome of this research will help in understanding the impacts of wind turbine development in the coastal zone.

RU-COOL wind analysis
The Rutgers University Coastal Ocean Observation Laboratory (RU-COOL), part of the Institute of Marine and Coastal Sciences, is proposing to provide a detailed analysis of the wind resource and sea surface conditions over the area designated for potential wind energy development as defined by the EMP. The results of the previous offshore wind resource analysis conducted by RU-COOL for the BPU will be used as the basis for the proposed study. That analysis used the Rutgers University version of the Weather Research and Forecast model. The new study proposes to further enhance and verify the Weather Research and Forecast model, and run it over the two-year study period, to enable further refinements in the estimates of the spatial and temporal variability of the offshore wind resource. Sea surface conditions and near surface winds for the entire study domain will be derived by Coastal Radar and high-resolution infrared satellite detection. Available data from the meteorological towers will be used to validate the vertical wind structure, and data from a surface current mapping radar network will be used to validate the complex horizontal structure. Site variability and local wind resource perturbations, such as the sea breeze circulation, that affect wind power production will be resolved.

b) This change was not driven by 309 or other CZM changes or efforts.

c) Results of the proposed project can be used to determine optimum, good, and poor locations for wind energy development, which will aid in the siting of wind turbine facilities to achieve greater benefits in terms of power production.

Education and Outreach
All of the NJDEP's efforts, including the rule development and Ecological Baseline studies are heavily influenced by outreach through public meetings and stakeholder engagement. For example, three public meetings have been held regarding the development of the rule amendments that address with wind turbine and solar facilities. These meetings were held throughout the rule making process to ensure stakeholders concerns were heard by the NJDEP. The EMP development also included a process for obtaining public input.

Priority Needs and Information Gaps

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

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Regulations identifying appropriate areas in State and ocean waters for wind energy facilities	Regulatory	H
Planning for offshore energy development, including consideration of cumulative impacts	Regulatory, Policy	H
CMSP to inform decision making with respect to the siting of energy facilities.	Regulatory, Policy	H
Means to address the impacts of nuclear energy on living resources, particularly secondary and cumulative impacts	Data, Policy	M

Enhancement Area Prioritization

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

High _ X___
Medium _____
Low ___

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

Although this enhancement area is important to the Coastal Management Program, it will be addressed under other enhancement areas, as discussed below.

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

Yes_____
No ___X___

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

While no strategy is being developed for this enhancement area, planning for offshore energy development will be addressed under the Ocean Resources strategy. The Coastal Management Office has determined that comprehensive Coastal and Marine Spatial Planning will be the most effective way to address and manage the growing interest in energy development in coastal and offshore waters. The SAMP strategy contemplates the development of a SAMP for the Barnegat Bay watershed, which is affected by one of New Jersey's four nuclear power plants.

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

Resource Characterization

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

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

Source of marine debris	**Extent of source** (H,M,L)	**Type of impact** (aesthetic, resource damage, user conflicts, other)	**Significant changes since last assessment** (Y or N)
Land Based – Beach/Shore Litter	H	Aesthetic, resource damage, user conflicts	Y
Land Based – Dumping	unknown	Aesthetic, resource damage, water quality impairment	N
Land Based – Storm Drains and Runoff	M	Aesthetic, Resource damage, Water quality impairment	Y
Land Based – Fishing Related (e.g. fishing line, gear)	L	Resource damage, user conflicts	N
Ocean Based – Fishing (Derelict Fishing Gear)	L	Resource damage, user conflicts	N
Ocean Based – Derelict Vessels	L	Aesthetic, navigational hazard,	N
Ocean Based – Vessel Based (cruise ship, cargo ship, general vessel)	L	Aesthetic, resource damage	N
Hurricane/Storm and extreme high tides	L	Aesthetic, resource damage, user conflicts, navigational hazard	N
Other: Coastal currents transporting marine debris from other states to NJ coastal waters	H	Aesthetic, Resource damage, Water quality, user conflicts	N
Other: Combined Sewer Overflows (CSOs)	M	Aesthetic, Resource damage, Water quality	N

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

Land Based – Dumping

New Jersey has interpreted this source to refer to illegal dumping on land at near shore locations. There is evidence of people going into sparsely populated areas to dump large waste material that they cannot place curbside, and for which they would have to pay for removal. Much of the New Jersey coastal area is remote enough to allow for this action to proceed uninterrupted. Railroad tracks also seem to be a magnet for illegal dumping. However, it is unknown how much of the material from this source of illegal dumping ends up as marine debris. According to the Ocean Conservancy's 2009 Report, "A Rising Tide of Ocean Debris," the amount of trash collected that is typically related to dumping activities in New Jersey was very low compared to other sources of trash and also low for New Jersey compared to other states such as New York, Massachusetts, Rhode Island and Virginia.

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

Land Based – Beach/Shore Litter

There have been significant changes in the extent of Land Based – Beach/Shore Litter during this assessment period. According to the 2005 International Coastal Cleanup Report published by The Ocean Conservancy, 14,050 pieces of litter in the Shoreline and Recreational Activities category were collected. The 2006 publication reports that 16,690 pieces were collected in the same category in New Jersey. In the 2007 report, that number increased to 68,666 and in 2008 it rose to 87,270 (2008 data appear in the report titled, A Rising Tide of Ocean Debris, 2009). According to the most recent report published in 2010 (Trash Travels), 72,811 pieces of litter in the Shoreline and Recreational Activities category was collected (this number reflects 2009 data), the first decrease since data were collected. The increases in the number of pieces collected from 2005 through 2008 over the years are likely due to the growth of the International Coastal Cleanup program, implemented in New Jersey as the Adopt A Beach Program coordinated by the NJDEP, and the larger number of participants and cleanup locations and activities in the state. The 2009 report (trash collected in 2008) includes trash collected via "watercraft cleanups." Better reporting protocols may have also lead to these increases. It is impossible to determine if more trash had actually accumulated on the state's shorelines during these years. However, it is known that more people participated in more cleanup events, thus leading to greater collection of the litter. The single year decline in 2009 trash collection figures (reported in the 2010 document) is insufficient to characterize it as a "trend."

Land Based – Storm Drains and Runoff

There have been significant changes in the extent of Land Based – Storm Drains and Runoff sourced marine debris. In the current assessment, Land Based- Storm Drains and Runoff has changed from a "Significant" (or High) source to a Moderate source. In 2004, the NJDEP adopted Stormwater regulations which establish a framework for addressing water quality impacts associated with existing and future Stormwater discharges. According to the Municipal Stormwater Regulation Program Status Summary Report for 2004-2008, published in June 2009 (the most recent data available) there have been significant improvements in efforts to control the amount of marine debris that enters New Jersey's waterways from storm drains and from runoff.

According to the Summary Report, by 2008, 98% of required Municipal Stormwater Management Plans had been adopted and 99% of Stormwater Control Ordinances had been adopted. By 2008, 99% of Tier A municipalities, those defined as "urban, suburban, and coastal" municipalities, had adopted pet waste ordinances and litter control ordinances. Ninety-eight percent adopted prohibition on improper disposal of waste ordinances and prohibition on illicit connections to municipal sanitary sewer systems (MS4s) ordinances. Ninety-six percent municipalities adopted yard waste ordinances.

Also, according to the Summary Report, since 2006, 902,659 miles of roads and highways have been swept statewide and over 213,000 tons of trash and debris were removed from New Jersey's streets and highways. Additionally, since 2006, 416,316 stormwater catch basins were cleaned in New Jersey and 172,785 tons of sediment, solids, and trash were removed from New Jersey storm sewers. Over 51,800 stormwater outfall pipes have been inspected and mapped since 2006 and over 290 illicit discharges of sanitary, industrial, or other wastes to New Jersey waterways have been eliminated.

The Summary Report further states that close to 1,010 educational events were held at the local level statewide since 2006. The NJDEP has also developed several education initiatives including the "Clean Water New Jersey" campaign, the launching of the website www.cleanwater.org, the creation of three television commercials and 6 radio public service announcements, and the production and distribution of 5 posters and tip cards on non-point source pollution. Finally, the NJDEP has taken close to 100 enforcement actions and assessed $671,750 in penalties for failure to comply with municipal permit conditions.

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

Yes. The NJDEP collects all of the volunteer data cards from Adopt A Beach Program volunteers and compiles the data on a spreadsheet. The results are sent to the Ocean Conservancy to be included in their annual report to Congress. Adopt A Beach data are also included in the NJDEP's Water Monitoring & Standards Cooperative Coastal Monitoring Program's annual summary report which is sent to EPA each year for inclusion in the annual Floatables Action Plan update. To date, the Adopt A Beach Program has removed over 815,000 items of debris from the State's beaches and shorelines.

Results and data for the Clean Shores Program, a year-round effort in which 20 inmates work 5 days per week with 2-3 full-time wood cutters, follow. Data collected from the Clean Shores Program are used for program tracking and evaluation, in award applications, and in newsletters and other public outreach documents and publications.

2006
155.3 miles cleaned
5.291 million pounds of debris removed (2645.5 tons)
2007
130.5 miles cleaned
4.105 million pounds of debris removed (2052.5 tons)
2008:
134.5 miles cleaned
4.145 million pounds of debris removed (2072.5 tons)
2009
150.7 miles cleaned
3.794 million pounds of debris removed (1897 tons)

Management Characterization

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

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

Management categories	**Employed by state/territory** (Y or N)	**Employed by local governments** (Y, N, Uncertain)	**Significant changes since last assessment** (Y or N)
Recycling requirements	Y	Y	Y
Littering reduction programs	N	Y	N
Wasteful packaging reduction programs	N	N	N
Fishing gear management programs	Y	N	Y
Marine debris concerns in harbor, port, marine, & waste management plans	N	N (employed by individual marinas)	N
Post-storm related debris programs or policies	N	U	N
Derelict vessel removal programs or policies	Y	N	Y
Research and monitoring	Y	N	N
Marine debris education & outreach	Y	Y	Y
Other: Screening requirements for CSOs	N (this is a state permit requirement implemented by local utility authorities	Y	N
Other: MARCO Water Quality Task: Marine Debris	Y	N	Y

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

a) Characterize significant changes since the last assessment;

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

c) Characterize the outcomes and effectiveness of the changes.

Recycling Requirements

On January 14, 2008 the Recycling Enhancement Act was signed into law. This legislation reestablishes a source of funding for recycling in New Jersey through a $3.00 per ton tax on solid

waste accepted for disposal or transfer at in-state solid waste facilities. Solid waste being transported out of state, either directly or by railroad, is also subject to the new recycling tax. The reestablishment of a funding source for recycling is especially significant, as inadequate funding has been considered one of the key reasons behind New Jersey's declining recycling rates, which have dropped precipitously over the past decade.

The Recycling Enhancement Act calls for 60% of the recycling tax fund to be used for recycling tonnage grants to municipalities and counties. An interesting new feature of the law is the requirement that a municipality expend its recycling grant funds only for its recycling program. One-fourth of the recycling fund will go to counties for preparing and implementing solid waste management plans, including the implementation of the goals of the State Recycling Plan. Counties will also receive 5% of the recycling fund for public information and education programs concerning recycling. Another 5% of the fund shall be used by the NJDEP to provide grants to institutions of higher education to conduct research in recycling. The final 5% of the recycling fund will be used by the NJDEP for recycling program planning and administrative expenses associated with the program.

In addition, the Recycling Enhancement Act calls for an $8,000,000 appropriation from the General Fund to the Recycling Fund for recycling grants to counties and municipalities. The NJDEP was required to issue these grants within twelve months of the signing of the Act. While recycling funds collected in the upcoming years will be used to repay this amount to the General Fund, this monetary infusion made available by the Act will be help reinvigorate New Jersey's programs over the short term.

b) This was not driven by 309 or other CZM changes or efforts.

c) Based on summary documents from the first year of the implementation of the grant component of the Recycling Enhancement Act, received from the Grants, Loans and Data Unit of the Bureau of Recycling and Planning, nearly every county in the state has received both their entitlement and bonus grants. Counties were awarded funding for various activities such as hiring peak season staff; collecting and recycling e-waste and tires; developing and distributing newsletters, hosting environmental fairs, and other educational activities; and conducting enforcement activities. Some counties have completed their projects but most are ongoing. Staff of the Grants, Loans and Data Unit are currently developing guidelines for the second year of Recycling Enhancement Act grants.

Fishing Gear Management Programs

a) Since the last Assessment, the NJCMP began partnering with the BoatU.S. Foundation and the BoatU.S. Angler Program to collect and recycle monofilament fishing line. BoatU.S. provided about 30 collection bins which were distributed to facilities around the state. The bins are made of sturdy PVC pipe with an opening near the top in which to place used fishing line. The host facility collects the material from the bins and ships it in postage paid boxes to Berkeley Conservation for recycling. Berkeley sends a replacement shipping box to the host facility. All boaters, fishermen, marina owners and others are encouraged to collect and recycle used monofilament fishing line in order to keep it out of the marine environment and help prevent unnecessary harm to aquatic life and personal watercraft.

After the first 30 bins were distributed, the Coastal Management Program was able to use CZM funding to provide educational signs and stickers to facilities that agreed to construct the bins. About 15 additional drop-off locations for fishing line exist due to this partnership.

b) This was not a 309 driven change. Section 310 funding was used in some years, and when not available, flexible funding provided under sections 306 and 309 for Coastal Nonpoint Program implementation projects was used. The Boat U.S. Foundation utilized funding from NOAA's Marine Debris Grant Program. The Coastal Management Program received the initial bins, signs, and stickers free of charge from the BoatU.S. Foundation.

c) The Boat U.S. Foundation created an on-line database to collect information regarding the amount of fishing line collected by all facilities with collection bins. Each facility in New Jersey with a bin was provided log-in information and was asked to enter data each time the bin was emptied or when a box of fishing line is mailed to the recycler. Marina owners and staff, as well as staff at state parks where some bins are located, are very busy and it has been a challenge to keep this task a priority for them. Many facilities have logged on to the site to report how full the bins are (¼, ½, ¾, ¼ or full) and to report that, often, trash such as aluminum cans, cigarette butts, and bait are also placed in the bin. The number of pounds of material collected is approximately 20 pounds. The Coastal Management Program continues to reach out to marinas to encourage and remind them to check the bins and report the amount of material collected.

Derelict vessel removal programs or policies

a) The 1975 Abandoned Vessels Disposition Law N.J.S.A. 12C-7, was amended in November 2008 and was renamed the Abandoned or Sunken Vessels Disposition Law. The hallmark of these revisions is that marina owners no longer have to wait six months before taking action to dispose of an abandoned or sunken vessel. After seven days an abandoned or sunken vessel may be impounded, moved and stored in a secure impound area by the appropriate person if that person has reason to believe the vessel has been abandoned. The marina owner must also notify New Jersey Motor Vehicle Commission by filing an incident report. The revisions further provide that if a vessel owner fails to claim the abandoned or sunken vessel and pay any storage, moving cost, charges or fines within thirty days notice, marina owners can apply to the Motor Vehicle Commission to become the title owner. These revisions to the law apply to both private and public marinas.

b) This was not driven by 309 or other CZM changes or efforts.

c) The outcomes or effectiveness of this new rule are unknown at this time. There is no information or data available from marina owners regarding whether they have had to use the process outlined in this rule.

Marine debris education & outreach

a) The New Jersey Clean Marina Program, a partnership between the Coastal Management Office and the New Jersey Sea Grant Consortium (formerly the New Jersey Marine Sciences Consortium/NJ Sea Grant), has purchased and distributed two different educational signs to marinas with messaging regarding the proper disposal of trash associated with marina and boat related activities. The message on the first is "Notice of Disposal Procedures: Please Comply with Marina Policies for boat sewage, fish waste, recyclables, trash, pet waste, used oil and other hazardous materials." The message on the second sign is "Do Not Dispose of oil, paint, flares, or fuel in this container. Stop by the marina office for disposal information." These signs are placed near the marina's dumpster or other trash receptacles. The New Jersey Clean Marina Program also produced and supplied stickers with the same message for placement directly on the receptacles.

Although, not typically considered a "marine debris" concern, the New Jersey Clean Marina Program also helped promote the statewide marine shrink-wrap collection and recycling program to boaters and marina owners and operators. This program began in 2008 with funding provided

to participating counties for up to two years. The funding was made available through an I BOAT NJ grant to the Coastal Management Office who then created a pass through mini-grant program to county recycling offices.

b) This was not a 309 driven change. Section 310 funding was used in some years, and when not available, flexible funding provided under sections 306 and 309 for Coastal Nonpoint Program implementation projects was used.

c) One hundred and ninety-two "Notice of Disposal Procedures" signs have been distributed to approximately 60 marinas. One hundred and sixty three "Do Not Dispose" signs have been distributed to approximately 65 marinas and 203 stickers were distributed to about 65 marinas. Specific data regarding decreases in the number of trash items improperly placed in bins at these marinas are not available. However, during informal discussions with marina owners, they have indicated a generally high level of compliance by boaters and slip holders. Some indicate that boaters sometimes place the listed items such as used oil containers and empty paint cans next to the bin but that this is preferable to inside the bin. Marina staff are then able to easily collect the items for proper disposal. According to reports from participating counties, over 300 tons of plastic marine shrink-wrap were collected and recycled from April 2008 through December 2009.

MARCO Water Quality Task: Marine Debris

a) MARCO (Ocean and Great Lakes Assessment) has identified four key issue areas of which Water Quality is one. One of the key tasks within the Water Quality issue area is to identify region-wide efforts to control and remove marine debris and floatables, including developing an action plan to address regional gaps in the control and removal of marine debris. The NJDEP, specifically the Coastal Management Office staff, are charged with acting as the lead for this task. At this time, New Jersey is working with the other MARCO states to identify ongoing state efforts and best management practices relating to marine debris prevention and removal. The next steps under this task are to establish target goals, identify mechanisms to reduce prevalent types of marine debris, and build on state and local efforts to address the problem on a regional scale.

b) MARCO was a 309 driven change. However, over the past year, MARCO has been funded through 306 funds.

c) The work to date has not been completed in a manner sufficient to determine the outcomes or effectiveness of the tasks. Staff are only in the first stages of task implementation.

Priority Needs and Information Gaps

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

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Land based dumping is a limited but	Data	L

recognized concern in NJ. However, the specific extent to which this occurs, the location of the remote areas where it occurs, and the impacts of such debris on coastal water quality and resources are not known.		
A regional approach to the control and management of marine debris	Policy, Data, Capacity	H- because coastal currents transporting marine debris from other states to NJ coastal waters represent a significant source of marine debris
Extent of derelict commercial fishing gear and potential impacts on coastal resources	Data	L

Enhancement Area Prioritization

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

   High _____
   Medium _____
   Low __X___

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

The level of priority given for this enhancement area reflects the limited suitability of Section 309, with its emphasis on program changes, for addressing the underlying issues and gaps identified. This ranking does not diminish the enhancement area's greater priority for overall management of the coastal zone beyond the use of Section 309 funding. Coastal Management Office will continue to focus on a regional approach to marine debris control and removal efforts through section 306 and the MARCO initiative and will contribute, to the extent possible, to assist with other marine debris management efforts within the NJDEP and by other local agencies and organizations with an interest in this enhancement area.

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

   Yes_____
   No ___X__

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

None of the identified needs or gaps are appropriate for section 309 funding as data collection efforts and outreach initiatives are not eligible program changes. Such efforts can be addressed through other CMP funding and through partnership efforts as indicated above.

Ocean/Great Lakes Resources

Section 309 Enhancement Objective
Planning for the use of ocean resources

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

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

Resource or use	**Existing threat or use conflict**	**Degree of threat** (H,M,L)	**Anticipated threat or use conflict**
Fish (including shellfish)	Contaminant loading Habitat degradation or loss By catch Overfishing Fish Advisories	H- fish are especially vulnerable to impacts associated with increased potential for oil and gas exploration and alternative energy uses of the OCS, see below	Habitat degradation or loss Increased contaminant loading/fish advisories
Living marine resources	Algal blooms Low oxygen levels	M*	Hypoxia
Marine mammals	Incidental fishing takes Vessel strikes Entrainment and impingement in sand dredging gear Habitat displacement Noise	M*	Increased incidences of the current threats and conflicts Potential for Oil and Gas exploration
Sea Turtles	Incidental fishing takes Vessel strikes Entrainment and impingement in sand dredging gear Habitat displacement	M*	Increased incidences of the current threats and conflicts Potential for Oil and Gas exploration
Birds	Habitat displacement	M*	Migratory flyway conflicts Direct impacts to resident birds (mortality)Indirect impacts (avoidance of feeding/breeding/traveling areas) Increased alternative

			uses of OCS
Fisheries (commercial and recreational)	Loss of access to fishing grounds	H- fisheries are especially vulnerable to impacts associated with the increased potential for oil and gas exploration and alternative energy uses of the OCS, see below	Increased incidences of the current threats and conflicts

Resource or use	**Existing threat or use conflict**	**Degree of threat** (H,M,L)	**Anticipated threat or use conflict**
Sand mining for beach nourishment	Fish and shellfish habitat disturbance and destruction	M- with current rates of erosion, sea level rise, and coastal storms, the degree of threat to habitat from this use is estimated to continue to be moderate	Increasing demand for beach nourishment
Sand mining for commercial aggregates	Fish and shellfish habitat disturbance and destruction	L- current threats to this use are low and it is not anticipated that they will increase with future uses of NJ's off shore areas	Continued incidences of current threat and conflict
Artificial reefs	Habitat modification	L- current threats to this use are low and it is not anticipated that they will increase with future uses of NJ's off shore areas	Potential overfishing due to fish congregation Placement/aggregation of unsuitable material
Water Quality Bathing Boating	Marine debris and floatables on the beach Contaminated stormwater from stormwater outfalls and non-point sources Beach closures	L- current threats to this use are low and it is not anticipated that they will increase with future uses of NJ's off shore areas	Reduced incidences of current threat and conflict
Oil and gas exploration	None at the present time,	M- the degree of threat to ocean resources is estimated to be moderate if oil and gas exploration on the Atlantic OCS commences; however	Oil spills and drilling discharges Spatial use conflict Onshore impact from offshore activity. Exploration impacts, Marine

		this characterization depends on the extent to which resource protection mechanisms are implemented	pollution
Dredged material placement in the Historic Area Remediation Site (HARS)	Bioaccumulation of contaminants	L	Food chain impacts
Alternative Energy Uses of OCS		H- due to increasing demand for such uses of NJ's coast, the degree of the threat of potential impacts to coastal resources from this resource use is high	Secondary & cumulative impacts, Increased loss of fishing grounds, use conflicts, habitat degradation, mortality and displacement Noise Vessel traffic

Resource or use	**Existing threat or use conflict**	**Degree of threat** (H,M,L)	**Anticipated threat or use conflict**
Deepwater LNG ports and pipelines		H- the degree of the threat of potential impacts to coastal resources from this resource use is high	Secondary & cumulative impacts, Loss of additional fishing grounds due to spatial conflicts and security buffer zones, use conflicts, habitat degradation, mortality and displacement Noise Vessel traffic Water quality impacts
Electrical cables	Loss of fishing grounds due to spatial conflicts	L- such uses of NJ offshore areas are not expected; therefore, the degree of threat to resources is low	Additional loss of fishing grounds due to spatial conflicts as new cables/energy projects are installed
Telecommunication cables	Loss of fishing grounds due to spatial conflicts	L- such uses of NJ offshore areas are not expected; therefore, the degree of threat to resources is low	Additional loss of fishing grounds due to spatial conflicts if new cables are installed.

* It is estimated that this resource will be moderately impacted due to increased potential for oil and gas exploration and alternative energy uses of the OCS. Results of the Ecological Baseline Study should provide additional data and support for this characterization of the degree of threat to this resource.

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

Oil and Gas

The Atlantic region of the OCS had been under Presidential Withdrawal and Congressional Moratoria for decades until President George W. Bush lifted the Presidential Withdrawal in 2008 and Congress followed allowing the moratorium to lapse. There has been significant interest in commencing oil and gas exploration on the Atlantic OCS, but this area had not been included in any five-year planning process in recent times. On March 31, 2010 Secretary of the Interior Ken Salazar announced that the Obama Administration will expand oil and gas development and exploration on the U.S. OCS, while protecting fisheries, tourism, and places off U.S. coasts that are not appropriate for development. The BOEM is beginning the scoping process for the 2012-2017 Five Year OCS Oil and Gas Program to determine areas to be studied under the EIS process. This renewed interest and end of the moratoria increase the potential for oil and gas exploration and development and the associated threats to the resources and uses of New Jersey's Coastal Zone. The April 20, 2010 Deepwater Horizon drilling rig incident, where 11 employees lost their lives and millions of gallons of oil and natural gas flowed into the Gulf of Mexico, serves to highlight the dangers of exploration and drilling on the OCS.

Dredged material placement in the Historic Area Remediation Site (HARS)

The Dredged Material Management Plan for the Harbor indicates that as of March 2005, approximately 22.5 million cubic yards of Remediation Material had been placed at the HARS since its designation. Monitoring of the HARS is on-going and includes side scan, bathymetry, benthic recolonization, Remote Ecological Monitoring of the Sea Floor. The Dredged Material Management Plan indicates that millions more cubic yards of material will be needed for remediation. The Dredged Material Management Plan also states:

> To ensure that the goal of remediation is achieved, the USEPA and the ACOE executed a Memorandum of Agreement (MOA) in 2000 that committed the two agencies to a process to update the Technical Evaluation Framework (TEF) that is used to make determinations regarding material proposed for remediating the HARS. The process outlined in the MOA included an extensive stakeholder and public involvement process along with conducting a scientific peer review on the USEPA-developed draft TEF. The purpose of this review is to ensure that the approach taken by USEPA and ACOE to evaluate dredged material for use at the HARS reflects the most recent scientific developments and to ensure that the approach remains consistent with the remedial objectives of the HARS designation.

Anticipated and existing threats have not been modified since the previous assessment while this research, being led by the USEPA, is being conducted.

Alternative Energy Uses of the OCS

Increased demand for alternative uses such as energy production and energy transmission could have effects not only on the natural resources of New Jersey's coastal zone but could also directly impact various existing uses vital to New Jersey. Commercial and recreational fishing play an important role in New Jersey's maritime industry and make a significant contribution to the state's economy. If navigation is impeded by new uses, impacts may be felt on New Jersey's economy. Not only could the construction and operation of new facilities on the OCS have a

negative impact on the natural resources, such as marine mammals, sea turtles, fish and avifauna, found there, if not properly sited, but also secondary impacts and increased risk of ship collisions could prove deleterious to marine life. The demand for utilization of the OCS has only increased since the last assessment with many more projects being proposed in state and federal waters, making clear the need for strong coordination and comprehensive planning to ensure a proper balance. Please refer to the Energy assessment for a discussion on the EMP and how it will drive development of renewable energy for New Jersey.

Deepwater LNG Ports

As noted in the Energy assessment (see page 36), there has been a great deal of interest in energy facility siting offshore of New Jersey, in particular the siting of deepwater ports for importing LNG. Three deepwater ports for LNG have been proposed offshore of New Jersey.

Management Characterization

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

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

Management categories	**Employed by state/territory** (Y or N)	**Significant changes since last assessment** (Y or N)
Comprehensive ocean/Great Lakes management plan or system of Marine Protected Areas	N	N
Regional comprehensive ocean/Great Lakes management program	Y	Y
Regional sediment or dredge material management plan	Y	Y
Intra-governmental coordination mechanisms for Ocean/Great Lakes management	Y	N
Single-purpose statutes related to ocean/Great Lakes resources	Y	N
Comprehensive ocean/Great Lakes management statute	Y	Y
Ocean/Great Lakes resource mapping or information system	Y	Y
Ocean habitat research, assessment, or monitoring programs	Y	Y
Public education and outreach efforts	Y	Y
Other (please specify)		

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

a) Characterize significant changes since the last assessment;
b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
c) Characterize the outcomes and effectiveness of the changes.

Regional comprehensive ocean management program

a) The Mid-Atlantic Regional Council on the Ocean (MARCO) was created by the governors of New York, New Jersey, Delaware, Maryland and Virginia in June 2009. The agreement signed by the governors establishes guiding principles as the foundation for collaboration and establishes four initial priorities for shared action

- Coordinate protection of important habitats and sensitive and unique offshore areas on a regional scale
- Promote improvements in the region's coastal water quality
- Collaborate on a regional approach to support the sustainable development of renewable energy in offshore areas
- Prepare the region's coastal communities for the impacts of climate change on ocean and coastal resources

The Agreement also calls for working with stakeholders to create new partnerships in the development and implementation of these actions. Subsequent to the meeting, the states developed an action plan "Actions, Timelines, and Leadership to Advance the Mid-Atlantic Governors' Agreement on Ocean Conservation" that includes a problem statement for each of the four priorities, as well as goals, objectives and initial actions toward meeting those goals. A Mid-Atlantic Ocean Stakeholder conference focusing on the Mid-Atlantic Ocean Conservation: Building Partnerships to Take Action took place December 9-10, 2009.

b) This was a 309 driven change.

c) New Jersey's continued participation in MARCO enables closer collaboration with the region and opens more effective dialog with the federal government on issues of importance to the region**.**

Regional sediment or dredge material management plans

a) The Dredged Material Management Plan Implementation Report for the Port of New York and New Jersey was prepared in 1999 by the US Army Corps of Engineers, New York District. In 2005 the New York District initiated a significant update to the Dredged Material Management Plan Implementation Report. In 2008, a Dredged Material Management Plan Update was completed, summarizing efforts in the New York/New Jersey Harbor. The Update will guide the treatment and use of dredged material from the Harbor, and continues to call for the beneficial use of dredged material.

A Regional Sediment Management Plan for the New York/New Jersey Harbor Estuary was released in October 2008, as the result of work by the Regional Sediment Management Workgroup of the New York/New Jersey Harbor Estuary Program. The Regional Sediment Management Plan addresses sediment quality, sediment quantity, and dredged material management. The Workgroup was charged with developing a plan that integrates sediment management activities for the Harbor Estuary. The goal of the Regional Sediment Management Plan is to offer:

- Specific goals and targets to improve the Harbor Estuary ecosystem, public health, and the local/regional economy
- Sustainability in carrying out future tasks at the Harbor Estuary
- Technical credibility and regional support

The Philadelphia District of the ACOE has initiated the development of a Delaware Estuary Regional Sediment Management Plan. According to a January 2010 fact sheet prepared by the Philadelphia District:

This project is bringing together partners, stakeholders and interest groups to manage dredged sediments on a regional basis for the Delaware Estuary, and supports a longer-term regional sediment management plan (RSMP). The goals of this project are to assemble and manage a diversified Regional Dredging Team; commence a RSMP Team to develop a long-term sustainable RSMP and a multi-agency Memorandum of Understanding; and to compile ACOE data to populate the NJDOT's Dredged Material Management System (DMMS) GIS database and 'dredged material marketplace'. Compilation of dredging data will assist in freeing up Confined Disposal Facilities capacity for future dredging efforts for the Philadelphia-to-Trenton section of the river.

http://www.nap.usace.army.mil/cenap-dp/projects/factsheets/NJ/5OM_Del%20Estuary%20RSM.pdf

b) This was not driven by 309 or other CZM changes or efforts. However, the office coordinating the regional or dredged material management plans work is part of the NJCMP.

c) These changes will continue to ensure the comprehensive management of dredge materials in the region.

Comprehensive ocean management statute

a) In 2007, the New Jersey Legislature established in the NJDEP the New Jersey Coastal and Ocean Protection Council. The council will consist of nine members: the Commissioner of Environmental Protection; the Chief Executive Officer of the New Jersey Economic Development Authority; the Executive Director of the Division of Travel and Tourism in the New Jersey Commerce, Economic Growth and Tourism Commission all of whom shall serve ex officio; and six public members to be appointed by the Governor with the advice and consent of the Senate for four-year terms. Of the public members one shall be a representative of the commercial fishing industry, representing the range of commercial fisheries in the State, including shellfish and finfish fisheries and fisheries in State and federal waters; one shall be a representative of the recreational fishing industry, representing the range of recreational fisheries in the State, including the hook and line and the party and charter boat fishing industry; one shall be a representative of the academic community with expertise, knowledge, or experience in coastal or ocean ecosystems and habitat; one shall be a representative of an environmental organization with expertise, knowledge, or experience in coastal or ocean ecosystems and habitat; one shall be a representative of a public interest group with expertise, knowledge, or experience in coastal or ocean ecosystems and habitat; and one shall be a representative of a non-profit organization with expertise, knowledge, or experience in habitat protection and land preservation.

The council shall have the following powers, duties, and responsibilities:

(1) to request from the commissioner of Environmental Protection any information concerning ecosystem-based management as it may deem necessary;

(2) to consider any matter relating to the protection, maintenance, and restoration of coastal and ocean resources;

(3) to submit, from time to time, to the commissioner any recommendations which the council deems necessary that will protect, maintain and restore coastal and ocean resources;

(4) to study ecosystem-based management approaches;

(5) to study any policies, plans, and rules and regulations adopted by the department that impact coastal and ocean resources;

(6) to study and investigate coastal and habitat protection;

(7) to coordinate and develop plans for a research agenda on ecosystem-based management;

(8) to consider data and any other relevant information on the overall health of New Jersey's coastal and ocean resources in order to document how the State is meeting the goal of

protecting, maintaining and restoring healthy coastal and ocean ecosystems; And (9) to hold public hearings at least once a year to take testimony from the public concerning ecosystem-based management approaches.

b) This was not driven by 309 or other CZM changes or efforts.

c) Several vacancies on the Council remain to be filled and therefore, the Council has yet to convene. Once established the Council will help guide ocean and coastal resource management in the context of ecosystem-based management while opening a dialogue with the various ocean and coastal related stakeholders to ensure their concerns are examined as part of the process. This will provide New Jersey with a separate scientific and public assessment of best management practices for our coast and ocean. Governor's Christie's Executive Order 15 directed a Cabinet-level review of all authorities, boards and commissions to determine whether each entity should continue or cease to exist. On September 10, 2010, the Governor's office released the Cabinet's recommendations submitted in accordance with EO 15. The NJDEP recommended the elimination of the Council, which would require legislative action.

Ocean resource mapping or information system

a) Marine spatial planning is recognized by MARCO member states as a means to advance most, if not all, of the four goals identified by the Mid-Atlantic Governors: Climate Change Adaptation, Ocean Habitat Protection, Offshore Renewable Energy and Water Quality Improvement. MARCO member states are each taking steps to develop offshore spatial plans for ocean waters off their coast and will coordinate through MARCO to ensure plans are integrated across the Mid-Atlantic region. In anticipation of initiating a marine spatial planning process, the five MARCO states have agreed to develop a regional, web-based GIS portal through which Mid-Atlantic Ocean data layers can be publicly viewed. In response to this need, the Virginia Coastal Zone Management Program has provided funding to The Nature Conservancy to create a prototype data portal for the Mid-Atlantic region. The vision for this project is to provide easy access to regional scale ocean data from beaches out to the submarine canyons at the edge of continental shelf, supplemented with additional state specific data (VA, MD, DE, NJ, NY) and tailored to serve the needs of MARCO. New Jersey Coastal Management Office staff is working closely with the other states and The Nature Conservancy to develop the portal.

b) This is a 309 driven change. Currently MARCO is mostly staffed through the states' coastal programs, with Coastal Management Office staff responsible for the day to day coordination of MARCO actions and program development.

c) New Jersey's continued participation in the development of the portal will enable closer collaboration in the region with stakeholders and ensures open access to data vital to the comprehensive management of ocean resources and uses.

Ocean habitat research, assessment, or monitoring programs

a) The NJDEP released a Solicitation for Research Proposals for Ocean/Wind Power Ecological Baseline Studies in April 2007. Geo-Marine, Inc. was ultimately contracted to conduct those studies. To meet the project goal, baseline data were collected on birds, sea turtles, and marine mammals over a 24-month period to fill major data gaps identified for each group. The major data gaps identified in the Solicitation were:

- Avian Species: Data are lacking on the abundance, distribution, and flight behavior (i.e., height and regular pathways) for bird species in the offshore waters of New Jersey. Data are also needed on the distribution, abundance, and behavior of birds during various

environmental conditions (e.g., fog, night, poor visibility) where wind turbines may have greater impacts.

- Marine Mammals: Population estimates are available but have been deemed unreliable due to spatial and temporal variability. There is a limited data set for the Study Area (which extends out to 20 nautical miles offshore), but standardized abundance data and information on movement pathways are lacking.
- Sea Turtles: Available data indicate that most turtle sightings in waters off New Jersey's coast are made during the summer months of June through August, however, turtles can be found in New Jersey waters from May to November. Data sources include tracking devices (e.g., satellite tracking), strandings, and accidental encounters. There is a very limited data set for the Study Area. Essentially no standardized abundance data are available.
- Fish and Shellfish: Data in the literature on commercial and recreational landings, as well as reports on the distributions of species (e.g., NJDEP and National Marine Fisheries Service reports) are available. Both NJDEP and federal agencies conducted surveys of offshore waters for fish and shellfish, therefore, existing data are available to assess the spatial and temporal distribution of most major commercial and recreational species in offshore waters. The major data gap is the lack of a recent and comprehensive compilation of spatial and temporal data on these species in a digital and Geographic Information System (GIS)-compatible format.

Project Objectives:
The overall goal of the study is to provide spatial and temporal data on species utilizing New Jersey offshore waters in the study area encompassing approximately 1,360 square nautical miles and stretching from the area adjacent to Seaside Park in the north to Stone Harbor in the south. This area extends 20 nautical miles perpendicular to the shoreline. This data will assist in determining potential areas for wind power development. The study was designed to provide and compile the following information:

1. What are the abundance, distribution, flight behavior (i.e., height and regular pathways), and utilization (e.g., feeding, breeding) of bird species in the Study Area?
2. What are the abundance, utilization, and distribution (e.g., feeding, breeding) of marine mammals in the Study Area?
3. What are the abundance, utilization, and distribution (e.g., feeding, breeding) of sea turtles in the Study Area?
4. What are the abundance, utilization, and distribution of other marine biota (e.g., fish, shellfish) in the Study Area?
5. What is the distribution of other existing natural resources, including, but not limited to, shoals and sand?
6. Using predictive modeling, mapping, and environmental assessment methodologies, what portions of the Study Area are more or less suitable for energy power facilities based on potential ecological impacts?

Three primary field surveys (Avian, Marine Mammal, Sea Turtle) along with supporting oceanographic studies are required to provide the data necessary to answer the project objectives. Other study components necessary to answer the project objectives include literature review, data compilation (digital and historical), model development, impact assessment, GIS (development of new and existing data coverages for the Study Area), and reporting. The final report was issued in July 2010. Public access to all of the information collected through the studies is available by contacting the Department's Division of Science.

b) This study was not funded through 309 or other CZM changes or efforts, although staff participation on the Technical Review Committee is funded through 309 as well as staff

participation on the Blue Ribbon Panel on Development of Wind Facilities in Coastal Waters, which recommended that the study be conducted. The State of New Jersey invested over $7 million in this baseline study effort. Although funding was not directly provided through the CZM program, the Coastal Management Office staff participates in the Technical Review Committee that designed the Solicitation for the studies, addressed necessary technical changes in the study, and reviewed all work products. The committee consists primarily of NJDEP staff, but also includes participants from federal agencies, National Marine Fisheries Service, U.S. Fish and Wildlife Service and BOEM.

c)The outcome of the studies will be utilized by New Jersey's Coastal Management Program and throughout the NJDEP. There have not been any other studies that are comparable in breath and length to these studies and they will serve as a source of scientific information and a basis for future studies throughout the region. New Jersey is working with the other Mid-Atlantic States as well as BOEM to develop consistent protocols to be used throughout the region to have consistent methodologies for survey and monitoring work across their Alternative Energy Leasing program. NJDEP has held numerous public meetings to inform the public on the progress of the studies and will hold another public meeting with the release of the final report and all data collected over the course of the study will be freely available.

Public education and outreach efforts

Public education and outreach efforts were done through the specific management categories discussed above, such as the MARCO two day stakeholder meeting and multiple public outreach sessions on the Ecological Baseline Studies discussed above.

Priority Needs and Information Gaps

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

Gap or need Description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority*** (H, M, L)
NJ does not have an economic impact/Risk Analysis for ocean and near shore uses	Data	M
NJ does not have a CMSP	Regulatory/policy	H
A strong stakeholder process must be a component of any CMSP for NJ	Communication & outreach	H
Planning for the ocean should recognize its relationship to regional fishery activities	Regulatory/policy	H

Gap or need Description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority*** (H, M, L)
Economic considerations are vital in CMSP - NJ should determine the economic values of its coastal resources through an economic baseline study	Data	M

Enhancement Area Prioritization

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

High __X___
Medium _____
Low _____

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

This enhancement area is given a high priority because of the increased demands placed on the ocean environment and a need to coordinate and plan for the resources and uses in a comprehensive manner to ensure the sustainability of New Jersey's ocean ecosystem which is vital to the state's residents, environment and economy.

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

Yes___X___
No _____

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

The increase in demand to utilize the ocean environment for alternative energy such as wind turbines and conventional sources, such as oil and gas and LNG ports, coupled with the need for better management of existing uses and resources, makes it clear that in order for New Jersey to protect and enhance its resources, uses and economy the NJCMP will have to focus attention on ocean resources management. This will include continuation of efforts with MARCO and work with federal agencies to advance CMSP and the framework set forth by the Ocean Policy Task Force. The NJDEP and the Coastal Management Program will also pursue the use of a Special Area Management Plan process as a tool to better manage ocean resources and the competing uses of these resources.

Public Access

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

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

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

Type of threat or conflict causing loss of access	Degree of threat (H,M,L)	Describe trends or provide other statistics to characterize the threat and impact on access	Type(s) of access affected
Private residential development (including conversion of public facilities to private)	M	See response to item 2 below	Recreational
Non-water dependent commercial/industrial uses of the waterfront (existing or conversion)	M	See response to item 2 below	Recreational
Erosion	H	Winter storms	Recreational
Sea level rise/ Great Lake level change	M	Loss of beaches over time	Recreational
Natural disasters	L	--	--
National security	M	Raised in legislation and comments on the rules	Recreational
Encroachment on public land	L	--	--
Other			

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

Regulations
In light of the importance of the rights protected by the Public Trust Doctrine, the demand for access to tidal waterways and their shores, and the constant development pressures threatening to reduce the public's access to the waters and shores protected by the Public Trust Doctrine, the NJDEP proposed on November 6, 2006 new rules and amendments to the CZM rules, N.J.A.C. 7:7E, to refine and increase the predictability of the NJDEP's public access requirements, and set forth more specific requirements for Shore Protection Program and Green Acres Program funding for projects along tidal waterways. In addition, a new special area rule, Lands and waters subject to public trust rights, was proposed to protect tidal waterways and their shores and ensure public access to these lands is provided. Various coordinating amendments to the coastal permitting

requirements of the Coastal Permit Program rules were also proposed. These amendments were adopted on December 17, 2007.

Concurrent with December 17, 2007 publication of the adoption of the public access rules, the NJDEP proposed amendments to further modify the Public trust rights rule and the rule containing information requirements for public access plans. The proposal responded to issues raised on the November 6, 2006 proposal. In summary, the proposed amendments allowed for the modification of the linear public access along a tidal waterway at marinas, superhighways, and for homeland security; modified the requirements for municipalities participating in Shore Protection Program funding through a State Aid Agreement for projects along the Atlantic Ocean, Sandy Hook Bay, Raritan Bay and Delaware Bay and their shores; and changed the timing requirements for submission of the public access plan and Public Access Instrument, where applicable under the Green Acres provision. The NJDEP adopted these amendments on January 20, 2009.

Litigation

Since the NJDEP's adoption of new public access rules in 2007 and 2009, New Jersey's public access policy is being shaped by court decisions and legislation, specifically, *Borough of Avalon v NJDEP* No. A-3410-07T3, *Sophie Bubis v. Jack Kassin and Joyce Kassin* No. A-5783-06T2, the Public Access and Marina Safety Task Force Act, N.J.S.A. 13:19-38 et seq. and proposed legislation both in the Senate and Assembly.

In *Borough of Avalon v NJDEP* No. A-3410-07T3, the Borough of Avalon filed an accelerated appeal challenging the NJDEP's statutory authority to promulgate the public access rule, adopted on November 17, 2007. Cape May County and the Borough of Stone Harbor appeared as amicus in support of Avalon and the American Littoral Society appeared as amicus in support of the NJDEP. On November 19, 2008, the Appellate Division rendered its decision, holding that the NJDEP does not have the authority to promulgate rules imposing parking and restroom requirements on municipalities participating in Shore Protection Program funding through a State-Aid Agreement. The NJDEP filed a notice of petition for certification with the New Jersey Supreme Court and petitioned the Court to hear its appeal from the Appellate Division decision. In April 2009, the Supreme Court denied certification. As such the Appellate Division decision stands.

In *Sophie Bubis v. Jack Kassin and Joyce Kassin* No. A-5783-06T2, Mrs. Bubis argued that the Kassins interfered with her rights under the Public Trust Doctrine by not allowing her to sit on a portion of the dry sand beach on their property. A private lifeguard, employed by the Kassins', asked her to move off the Kassins' beach. Mrs. Bubis refused citing her rights under the Public Trust Doctrine. In its December 11, 2008 decision, the Appellate Division held that owners of upland property can enforce reasonable restrictions on activities in the foreshore where those activities would interfere with measures the private owner has put into place to protect public safety. However, the Court also ruled that a private homeowner cannot impose restrictions on the use of the foreshore simply to "enhance their own enjoyment of their own property." In addition, the Court held that under the Matthews factors, the public was not entitled to the use of the dry sand area owned by the Kassins and that the public does not have the right of access to upland sand area of the Kassins' property. Mrs. Bubis filed a notice of petition for certification with the New Jersey Supreme Court petitioning the Court to hear her appeal from the Appellate Division decision. In June 2009, the Supreme Court denied certification. As such the Appellate Division decision stands.

Legislation

On September 10, 2008, the Public Access and Marina Safety Task Force Act, N.J.S.A. 13:19-38 et seq. was enacted. The Act imposes a moratorium on the implementation of the provisions of the CZM rules N.J.A.C. 7:7E-3.50, 7.3, and 8.11, as applied to marinas, as such rules and regulations were adopted by the NJDEP on December 17, 2007. The law establishes the Public Access and Marina Safety Task Force and charges it with the evaluation and study of the efficacy, practicability and feasibility of the December 17, 2007 amendments to these regulations and this proposal as it relates to public access at marinas. The task force is also charged with ascertaining the most reasonable and equitable manner in which to proceed with a public access and marina use policy. The task force is required to report to the Governor and Legislature by December 31, 2010. The legislation delays implementation of the applicability of the amendments to the public access rule related to marinas until January 1, 2011.

In 2008, the Assembly passed A2954 which would prohibit the NJDEP from requiring public access to tidal waterways and their shores at all military, industrial, transportation, energy and port facilities and also prohibit the NJDEP from requiring enhancement of off-site locations. In addition, the bill would preclude the NJDEP from applying all other CZM rules that require public access, including filled water's edge, bridges, transportation use, industry use, and port use. A companion bill S1921 was introduced in the Senate and later amended. The amended Senate Bill provided that public access be provided in certain circumstances. The bill would require the NJDEP to adopt a formula for determining the extent of off-site access should the NJDEP determine that on-site access is not feasible. Further the bill identified particular circumstances where public access could not be required from the NJDEP. The Substitute Bill was introduced in March 2009 and a vote on the bill was held in May 2009. The bill was not voted out of Committee.

On January 19, 2010, S919 was introduced in the Senate Environment Committee. This bill refined the concepts contained in S1921. In summary, this bill provides that, except as otherwise stated in the bill, any person proposing to construct a new structure or facility, make an improvement to an existing facility or structure along a tidal waterway, or perform any other development along a tidal waterway must provide reasonable on-site public access to tidal waterfront and adjacent shoreline or reasonable off-site public access to tidal waterfront and adjacent shoreline whenever on-site public access is deemed infeasible by the NJDEP. The person proposing the new development or improvement would also be required to develop a public access plan to be approved by the NJDEP and appropriate local government.

The bill would require the NJDEP to adopt rules or regulations governing the obligation of any person subject to these public access requirements. In particular, the bill would require the NJDEP to adopt an interim rule within six months after the bill's date of enactment that establishes a formula for determining a person's off-site public access obligation or requirement and the procedures by which this formula may be uniformly implemented. This may include a payment by the person into an escrow or other such account to be used for projects conducted by a local government, non-profit organization or other entity approved by the NJDEP to provide reasonable off-site public access in the region. The bill specifies parameters that the formula must take into account. The bill would require the NJDEP to adopt the formula within one-year. The bill provides that the NJDEP could not require any person to provide reasonable off-site public access until the formula was adopted, but could issue permits during that time period with a condition requiring that reasonable off-site public access be provided after the formula was adopted.

The bill also provides that the NJDEP may require, as a condition of receiving monies from the Shore Protection Fund or Green Acres funds, that the recipient provide reasonable on-site public access to tidal waterfront and adjacent shoreline or reasonable off-site public access to tidal waterfront and adjacent shoreline whenever on-site public access is deemed infeasible by the NJDEP.

The bill prohibits the NJDEP from adopting rules or regulations mandating on-site or off-site public access to tidal waterfront and adjacent for (1) an activity to upgrade existing facilities performed solely to comply with local, State or federally mandated pollution abatement or public health requirements; (2) activities directly related to the remediation of a contaminated site; or (3) a project solely for repair, rehabilitation or reconstruction of an existing facility, structure, bulkhead or pier, except whenever a new use that requires local land use board approval is proposed. This prohibition also applies to any improvement to an existing structure or facility that is part of a chemical or metallurgical industrial facility, marine terminal or transfer facility for waterborne cargo, airport, railroad yard or nuclear power plant, or any regulated portion of a major facility regulated pursuant to the "Spill Compensation and Control Act," or any covered process regulated pursuant to the "Toxic Catastrophe Prevention Act". Where public access had been provided in accordance with a coastal permit issued after November 6, 2006 additional public access can not be required except in circumstances where a change in use is proposed to a use that is not listed under the existing structures or facilities set forth in the bill

In addition, the bill would amend the Public Access and Marina Safety Task Force Act to provide that: (1) the moratorium imposed therein would expire two years after the appointment of the members of the task force; and (2) the task force must submit its report, including its findings and recommendations, to the Governor and the Legislature within two years after the appointment of its members, rather than by December 31, 2010. The bill is pending.

Stakeholder process

In April 2010, the NJDEP initiated a stakeholder process to discuss the appropriate public access policy for the State. A stakeholder meeting was held by the NJDEP on April 27, 2010. Environmental groups, landowners, marinas and the industrial/port community were represented at the meeting. The NJDEP is now considering the views presented at the meeting and appropriate next steps.

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

The New Jersey Sea Grant Consortium has initiated a survey of beachgoers, fishermen, surfers and other waterfront users to determine their perception and needs of public access to New Jersey's ocean and bay shores. The survey was administered on weekdays and weekends through Labor Day at public access points in Monmouth, Ocean, Atlantic and Cape May counties, including federal, state and county parks; municipal beaches; beach clubs; free beaches; beach badge beaches; beaches with commercial boardwalks and beaches with piers/fishing jetties. The survey was also conducted online at www.surveymonkey.com/s/beachaccess and also sent via email to various groups. Evaluation of the survey results are identified below. The Coastal Management Office participated in the review these survey results.

Contextual measure	Survey data
Number of people that responded to a survey on recreational access	1600
Number of people surveyed that responded that public access to the coast for recreation is adequate or better.	1.General safety and lifeguards rated as above average 2. Public access signage, pathways to the beach, parking fees and beach fees rated as 'Average' 3. 30% of users rated parking availability and restroom availability as 'Below Average'
What type of survey was conducted (i.e. phone, mail, personal interview, etc.)?	In-person, internet and e-mail to specific recreational user groups.
What was the geographic coverage of the survey?	Atlantic coast beachs
In what year was the survey conducted?	Summer 2010

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

New Jersey's coastal waters and adjacent shorelines are a valuable but limited public resource. While it is fourth smallest state in the country, New Jersey has the highest population density with approximately 1,174 people per square mile, which is almost thirteen times the national average. With the entire population living within 50 miles of the coast line, in addition to the region being a major tourist destination for two of the largest metropolitan areas, New York City and Philadelphia, demand for access is high. As a result of the poor economy, people are opting for "staycations" or home-based vacations. It is anticipated that demand for public access to New Jersey's beaches and coastal waters will remain high due to the developed nature of the State, its proximity to New York and Philadelphia, and its dense population. The NJ Marine Sciences Consortium/NJ Sea Grant is currently conducting a public access survey for NJ beachgoers. It is being given at beach access points along the coast and is also online at http://www.surveymonkey.com/s/beachaccess

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

Types of public access	Current number(s)	Changes since last assessment (+/-)	Cite data source
Number of acres in the coastal zone that are available for public access (report both the total number of acres in the coastal zone and acres available for public access)	947,999 acres* *Includes all coastal counties in their entirety	Not calculated for the previous assessment	Aerial Photograph, NJDEP GIS System, 2009 http://www.nj.gov/dep/gis/lists.html

Types of public access	**Current number(s)**	**Changes since last assessment (+/-)**	**Cite data source**
Miles of shoreline available for public access (report both the total miles of shoreline and miles available for public access)	1,792 miles	None	NJCMP Program Document
Number of State/County/Local parks and number of acres	949 parks* 782,533 acres* *Includes all coastal counties in their entirety	Last assessment only considered four oceanfront counties	Aerial Photograph, NJDEP GIS System, 2009 http://www.nj.gov/dep/gis/lists.html
Number of public beach/shoreline access sites	All municipal ocean and bay beaches are open to the public (beach tag required at most locations) and some privately owned beaches are open to the public Atlantic Coast inventory recorded over 1,300 accessways along the Atlantic Ocean	No change	Atlantic Coast Inventory, 2001
Number of recreational boat (power or non-power) access sites	262 boat ramps (note not all ramp owners choose to be listed in the guide)	Value Unknown at last assessment	NJ Boater's Ramp Guide 2007 NJMSC/NJ Sea Grant
Number of designated scenic vistas or overlook points	Not available	Not available	Not available
Number of State or locally designated perpendicular rights-of-way (i.e. street ends, easements)	Atlantic coast inventory recorded over 1,300 accessways along the 127-mile ocean coast	No change	Atlantic Coast Inventory 2001
Number of fishing access points (i.e. piers, jetties)	560 sites recorded along the ocean	No change	Aerial photography on NJDEP GIS (estimate from photos) http://www.nj.gov/dep/gis/

Types of public access	**Current number(s)**	**Changes since last assessment (+/-)**	**Cite data source**
Number and miles of coastal trails/boardwalks	<u>Coastal Trails:</u> • Coastal Heritage Trail (nearly 300 miles, largely highway) <u>Waterfront Walkway:</u> • Hudson River Waterfront Walkway 17.36 miles <u>Coastal Water Trails:</u> • Hackensack River Water Trail - 21 miles <u>Boardwalks:</u> Approximately 47 miles of boardwalk promenade through beachfront municipalities	No change 2.36 miles 21 miles No change	National Park Service New Jersey Coastal Heritage Trail website http://www.nps.gov/neje/index.htm Hudson and Bergen County Planning Departments Hackensack River Water Trail web site http://www.hackensackriverkeeper.org Aerial photography on NJDEP GIS (estimate from photos) http://www.nj.gov/dep/gis/
Number of dune walkovers	Walkovers that provide access are included in beach access sites above	No change	--
Percent of access sites that are ADA compliant access	Number of Atlantic Ocean municipalities claiming to have beach access for visitors with disabilities <u>Monmouth County</u> All <u>Ocean County</u> 88% <u>Atlantic County</u> All <u>Cape May County</u> All	12%	New Jersey Beach Guide 2009, published by NJ Department of Public Advocate

Types of public access	Current number(s)	Changes since last assessment (+/-)	Cite data source
Percent and total miles of public beaches with water quality monitoring and public closure notice programs	Extensive monitoring program for bathing beaches, consisting of monitoring or bathing beaches near a potential pollution source (e.g. stormwater outfall or coastal lake discharge). 100% of bay bathing beaches (74 stations) monitored. 186 ocean beaches monitored	No change	NJDEP Cooperative Coastal Monitoring Program
Average number of beach mile days closed due to water quality concerns	4.67 beach mile days Represents a recurrent localized problem at one or two beaches in NJ		NJDEP Cooperative Coastal Monitoring Program

Management Characterization

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

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

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Statutory, regulatory, or legal system changes that affect public access	Y	Y
Acquisition programs or policies	Y	Y
Comprehensive access management planning (including GIS data or database)	Y	Y
Operation and maintenance programs	N	N
Alternative funding sources or techniques	N	N

Management categories	**Employed by state/territory** (Y or N)	**Significant changes since last assessment** (Y or N)
Beach water quality monitoring and pollution source identification and remediation	Y	N
Public access within waterfront redevelopment programs	Y	N
Public access education and outreach	Y	N
Other (please specify)	--	--

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

a) Characterize significant changes since the last assessment;
b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
c) Characterize the outcomes and effectiveness of the changes.

Statutory, regulatory or legal system changes that affect public access:
Regulations
a) Amendments to the CZM rules, N.J.A.C. 7:7E and Coastal Permit Program rules, N.J.A.C. 7:7 were adopted in December 2007 and January 2009. The amendments as described in detail on page ## were intended to strengthen the NJDEP's existing public access requirements and set forth specific public access requirements for Shore Protection Program and Green Acres funding.

On December 17, 2007, then Commissioner Lisa Jackson issued Administrative Order No. 2007-09 to increase public access and use opportunities at NJDEP facilities, through development and implementation of public access plans for lands the NJDEP manages that are located along tidal waterways and their shores. The Administrative Order set forth a plan to increase public access and use opportunities for State parks, State marinas and State wildlife management areas.

On August 17, 2010, the NJDEP released draft proposed rules for enhanced public access to the state's coastal and other tidal waters, suggesting reasonable regulations but also employing additional, common sense measures to enhance public access. The new rules aim to eliminate unnecessary burdens on residents, businesses, and government entities while continuing to impose reasonable regulatory requirements and bringing to bear other resources to enhance public access.

The draft proposed rules were made publicly available for discussion prior to formal proposal. The public discussion on the draft rules precedes the normal rulemaking process; it does not replace, shorten, or otherwise change the normal 60-day comment period and any public hearings. The draft proposed rules are available at:
www.state.nj.us/dep/cmp/access/pa_rule_draft_100816.pdf

Litigation

***Borough of Avalon v NJDEP* No. A-3410-07T3**

In this case the Appellate Court held that the NJDEP does not have the authority to promulgate rules imposing parking and restroom requirements on municipalities participating in Shore Protection Program funding through a State-Aid Agreement.

***Sophie Bubis v. Jack Kassin and Joyce Kassin* No. A-5783-06T2**

In this case the New Jersey Supreme Court held that owners of upland property can enforce reasonable restrictions on activities in the foreshore where those activities would interfere with measures the private owner has put into place to protect public safety. However, the Court also ruled that a private homeowner cannot impose restrictions on the use of the foreshore simply to "enhance their own enjoyment of their own property." In addition, the Court held that under the Matthews factors, the public was not entitled to the use of the dry sand area owned by the Kassins and that the public does not have the right of access to upland sand area of the Kassins' property.

***City of Long Branch v. Jui Yung Liu and Elizabeth Liu* No. A-0237-07T2**

In this case, the New Jersey Supreme Court held that dry sand placed as part of a publicly funded beach replenishment project outshore of the Liu's property fell within the Public Trust Doctrine and was not the property of the upland owner.

Legislation

Public Access and Marina Safety Task Force Act

The Public Access and Marina Safety Task Force Act, N.J.S.A. 13:19-38 et seq. imposes a moratorium on the implementation of the provisions of the CZM rules N.J.A.C. 7:7E-3.50, 7.3, and 8.11, as applied to marinas, as such rules and regulations were adopted by the NJDEP on December 17, 2007. The law establishes the Public Access and Marina Safety Task Force and charges it with the evaluation and study of the efficacy, practicability and feasibility of the December 17, 2007 amendments to these regulations and this proposal as it relates to public access at marinas. The task force is also charged with ascertaining the most reasonable and equitable manner in which to proceed with a public access and marina use policy. The task force is required to report to the Governor and Legislature by December 31, 2010. The legislation delays implementation of the applicability of the amendments to the public access rule related to marinas until January 1, 2011.

b) The above regulatory changes were the result of 306 and 309 funding. The statutory changes were in response to the NJDEP's regulatory changes.

c) The regulatory changes were intended to ensure that the public's rights to access tidal waterways and their shores continue to be protected and that improvements are accomplished, such as assuring that parking and restroom facilities are available, to provide the public a realistic and meaningful opportunity to enjoy its resources. These regulatory changes were not effective in that they resulted in legislation and Court decisions which limit the public's ability to access tidal waterways and their shores in New Jersey and diminish the meaningfulness of such access to the residents of New Jersey and its visitors.

Acquisition programs or policies

a) New Jersey's Draft Coastal and Estuarine Land Conservation Plan (CELC Plan) was submitted to NOAA in March 2009. The NJCMP is in the process of finalizing the CELC Plan. This plan allows New Jersey to continue to qualify to receive funds under the national competitive Coastal and Estuarine Land Conservation Program (CELCP). New Jersey's CELC Plan will provide an

assessment of priority conservation needs and clear guidance for nominating and selecting coastal and estuarine land conservation projects within the State.

The New Jersey's CELC Plan is intended to be a management tool that works in concert with existing state, county, local and non-governmental acquisition programs to endorse coastal conservation projects and to leverage and maximize funding opportunities through acquisition and land management partnerships. The Coastal Management Office is the New Jersey CELCP lead. The Coastal Management Office envisions a CELCP planning process where it will coordinate with NJDEP's Green Acres Program, local and county governments, land trust organizations and other federal and state agencies to nominate unique or threatened coastal habitat projects to NOAA in response to competitive funding opportunities. The New Jersey CELC Plan will use existing resource management and protection plans, on-going conservation program plans, and other resource evaluations to identify priority projects within the coastal zone for land conservation.

In addition, the Coastal Management Office is currently working to compile a web-based data set including all lands acquired through the CELCP. This data set as well as continued partnerships with those municipal, county, state, federal and non-governmental organizations maintaining regional or area-specific conservation plans will ensure that the New Jersey CELCP stays attuned to the conservation efforts and priorities in the coast.

b) The development of New Jersey's CELC Plan was not driven by309; it is the result of 306 funding.

c) The CELCP has been effective in New Jersey, as the NJDEP has received approximately $11.5 million in funding, of which the Meadowlands District received approximately $5 million in CELCP funding to date.

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

The NJDEP first created a public access website in 2007. The site is updated as needed with the most recent update occurring in August 2010. The site explains why the NJDEP is proposing changes to the rules and includes a link to the draft proposed rules. The site also provides links to a variety of public access resources, including an interactive map of access points and beach information about beach facilities along the Atlantic Ocean from Monmouth County to Cape May County; a beach guide that is searchable by amenities; beach water quality, beach closings, and surf information; boat ramp and kayak launch sites; and information about fishing licenses and locations. The public access website will be regularly updated to reflect the rules process as it advances and to provide additional public access resources.

Priority Needs and Information Gaps

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

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Municipal Public Access Plans and guidelines	Policy/Training	H
Public Access rules should be enhanced to reflect different geographies on the state and differing needs of the public. Public Access rules need to be amended to prevent case-by-case approach created by litigation.	Regulatory	H

Enhancement Area Prioritization

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

   High __H___
   Medium _____
   Low _____

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

The High priority given for this enhancement area reflects the suitability of Section 309, with its emphasis on program changes, for addressing the gaps and needs identified as being of High priority. It also considers the enhancement area's priority for overall management of the coastal zone beyond the use of Section 309 funding.

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

   Yes___**X**___
   No _____

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

In an effort to provide public access to tidal waters in a more effective and comprehensive manner the Department will be proposing amendments to the public access section of the Coastal Zone Management Rules. These proposed amendments will be guided by the standards set forth in Governor Christie's Executive Order No. 2 which demands that rules be governed by a set of "common sense principles." In addition, a State Red Tape Review Group's Findings and Recommendations (April 19, 2010) determined that elements of the existing public access rule needed revision. In response to Governor Christi's Executive Order No.2, the Red Tape Review Group and extensive stakeholder input the NJDEP will propose and adopt rule amendments. It is proposed that the outcome of this strategy will improve New Jersey's ability to attain increased opportunities for public access, taking into account current and future public access needs.

Special Area Management Planning

Section 309 Enhancement Objective

Preparing and implementing special area management plans for important coastal areas

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

Resource Characterization

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

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

Geographic Area	Major conflicts	Is this an emerging or a long-standing conflict?
Delaware River Estuary	Land Use Development and its impact on wetlands, stormwater, habitat loss. Impacts of sea level rise on wetlands, water quality and shoreline stability.	Long-standing and emerging conflicts exist.
Barnegat Bay Estuary	Extensive Land Use Development and its well-documented adverse impacts on wetlands, stormwater, significant eutrophication of embayments, and extensive habitat loss. Strong likelihood of impacts of sea level rise on highly developed coast and back bay.	Long standing and emerging issues as development continues to increase and the health of Barnegat Bay and its living resources continue to decline.
Atlantic Ocean	Multiple human uses and potential uses, including recreational and commercial	Long-standing and emerging for some uses

	fishing, boating, surfing, diving, shipping, submerged cables, sand borrowing, alternative energy, deepwater ports	

Delaware River Estuary

The Delaware Estuary is bounded by three states: New Jersey, Delaware and Pennsylvania; each having different regulatory programs and standards for the same resources. Within New Jersey the land area adjacent to the estuary is governed by multiple local and county agencies. This creates multi-jurisdictional conflicts. As one of the least populated shorelines with a diversity of exceptional natural resources, the region is now experiencing tremendous population growth and development. The Delaware Estuary is also experiencing climate change related issues such as the inability of wetlands to keep pace with sea level rise due to the lack of sediment; the impacts of sea level rise on wetlands health and extent; subsidence; and the migration of alien or invasive species into wetlands. This area is within the management area of the Delaware Estuary National Estuary Program, which adopted a Comprehensive Conservation and Management Plan for the Delaware Estuary National Estuary Program in September 1996.

Barnegat Bay Estuary

The Barnegat Bay estuary covers over 42 miles of shoreline from the Point Pleasant Canal to Little Egg Harbor Inlet and is protected from the open ocean by a system of barrier beaches and dunes. The Barnegat Bay watershed is a 660 square mile area encompassing 33 municipalities and all of the land and water in Ocean County, as well as four municipalities in Monmouth County. Updated (2006) land use mapping reveals that urban land use increased from approximately 25% in 1995 to approximately 30% of the Barnegat Bay/Little Egg Harbor watershed in 2006. Including all altered land uses (i.e., agriculture and barren lands) brings the percentage of altered land in the watershed to over 33% in 2006. Increasing population, land use development patterns, stormwater runoff and loss of habitat and wetlands have had significant deleterious impacts on the ecosystem. Seventy-one percent (10,729 acres) of Barnegat Bay's shoreline buffer zone is presently developed and/or altered, leaving only 29% (4,406 acres) in natural land cover. The estuary system is continuing to experience a significant conversion of forested and wetland habitats to urban land cover. This increasing and continuous land use change is contributing to the problems being experienced in the Bay including eutrophication, loss of wetlands and submerged aquatic vegetation. The estuary is suffering from eutrophication due to nutrient loading, most importantly nitrogen, from atmospheric deposition as well as urban and agricultural land use in the watershed. It is expected that the impacts of sea level rise on developed coastal and back bay areas will further compound the issues facing Barnegat Bay. This area is within the management area of the Barnegat Bay National Estuary Program, which adopted a Comprehensive Conservation and Management Plan for the Barnegat Bay Estuary in May 2002. A significant portion of the watershed area for the Barnegat Bay also falls within the Pinelands Conservation Area as well as being within the designated area for the Jacques Cousteau National Estuarine Research Reserve.

Atlantic Ocean

New Jersey’s coastal waters are rich in natural resources and provide habitat for fish, shellfish, turtles, marine mammals and birds. Ocean waters have been used extensively for centuries.. Recently the interest in siting alternative energy facilities, particularly wind turbines, is strong. Several deepwater ports have been proposed over the past five years, and there has been renewed interest in offshore oil and gas exploration. Many of these existing and potential ocean uses

occur in federal waters, and numerous agencies are involved in their management. Recent initiatives such as the New Jersey study on the potential impacts of wind turbines in the ocean, MARCO, the establishment of an Integrated Ocean Observing System and coastal and marine spatial planning efforts have drawn attention to conflicts in management responsibility and resource use.

Management Characterization

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

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

SAMP title	**Status** (new, revised, or in progress)	**Date approved or revised**
New Jersey Meadowlands	Completed	SAMP – Routine Program Change NOAA/OCRM Letter of Concurrence October 2009

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

a) Characterize significant changes since the last assessment (area covered, issues addressed and major partners);
b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts;
c) Characterize the outcomes and effectiveness of the changes.

a) The New Jersey Meadowlands is the only area in New Jersey's coastal zone with a SAMP. The New Jersey Meadowlands Commission (NJMC) adopted a revised Master Plan in January 2004, the first major revision since 1970. The revisions to the Master Plan were followed in February 2004 by amendments to the Zoning Ordinances for the district to reflect the revised Master Plan. The NJDEP amended the CZM rules relating to the New Jersey Meadowlands, effective April 2008. The amendments included changes to the Wetlands rule that specify the standards used to review proposed coastal activities and development located in wetlands within the District, as well as amendments to the Hackensack Meadowlands rule that clarify the application of the CZM rules in the review of coastal activities or developments within the District. In October 2009, the Office of Ocean and Coastal Resource Management approved the NJDEP request to incorporate some of these changes into the NJCMP as enforceable policies. Specifically, the following were incorporated into the program as a routine program change: the NJMC Master Plan adopted in 2004 (only certain strategies in Chapter 10 are considered enforceable policies); portions of subchapters 2, 3 ,4, 5, 7, 8 and 9 of the District zoning regulations, N.J.A.C. 19:4 as amended through January 20, 2009; regulatory amendments to the CZM rules regarding Wetlands and the Hackensack Meadowlands District that were adopted on April 7, 2008; and the November 9, 2005 Memorandum of Agreement between the NJDEP and NJMC that establishes the roles and responsibilities of each agency as it pertains to land use planning and permitting and

regulatory oversight within the New Jersey Meadowlands District. This change to the Program became effective on November 16, 2009.

b) This was a 309 driven change.

c) The NJMC Master Plan presents a cohesive set of planning principles and standards adopted by the NJMC to guide future development while protecting the resources of the District. The NJDEP incorporated the entire NJMC Master Plan into its approved Coastal Management Program, while only those sections of Chapter 10, Systems Plans, addressing natural and historic resources, transportation, housing, and community development are being incorporated as enforceable policies as they are most relevant to the management of New Jersey's coastal resources.

Priority Needs and Information Gaps

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

Gap or need description	**Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority** (H,M,L)
Comprehensive plan for Barnegat Bay watershed; regional approach with direct link to DEP regulations to address the declining health of the bay.	Comprehensive plan	H
Comprehensive plan for Delaware Bayshore- that coordinates the efforts of the various authorities in this multi-state jurisdiction - such as the DRBC, NEP, NPS, USF&WS.	Comprehensive plan	M
Ecological indicators for the Delaware Bayshore	data	M
Public education and outreach	outreach	M
Marine spatial plan for the Ocean that extends into this large embayment (see Ocean Resources enhancement area for rationale for the high level of priority for this gap)	Policy, regulatory	H
Catalogue of who the "players" are – i.e. who regulates, licenses, etc.	Capacity	M

Enhancement Area Prioritization

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

   High __X___
   Medium _____

Low _____

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

New Jersey's Coastal Management Plan identifies Geographic Areas of Particular Concern (GAPC). As these GAPC have experienced continued development the cumulative and secondary impacts of the associated with land use changes and permit decisions have resulted in a decline of their environmental health. Often the piece meal approach to environmental management is not successful and a need for a comprehensive approach that identifies and defines the problem, articulates a strategy with measureable outcomes and establishes a framework for implementation is necessary to address the issues. The section 309 enhancement area for the development of a SAMP is an excellent tool to address the gap identified for the Barnegat Bay. In December of 2010, Governor Christie announced a comprehensive action plan to address the health of Barnegat Bay. This comprehensive plan of action will embrace multiple tactics to address the varied and complex issues impacting the Barnegat Bay's health. The development of a comprehensive plan of action to address the short and long term ecological health of Barnegat Bay is a priority goal of Governor Christie, the NJDEP and of the Coastal Management Program. The Governor's Action Plan recognizes the SAMP as a meaningful tool to prevent further degradation and to begin the restoration of the Bay's habitats and health. This comprehensive ecosystem based approach to achieving measureable improvements has the political, scientific and regulatory (federal, state and local) support to move toward success.

In addition the NJDEP and the Coastal Management Program have identified that the Special Area Management Plan process in combination with a strategy to utilize coastal and marine spatial planning would be an appropriate methodology to address the management of the states ocean and nearshore resources and their competing uses.

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

Yes__X__
No _____

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

The NJDEP and the OCM has determined that comprehensive planning for Barnegat Bay would be well suited to a SAMP. Governor Christie's 10 Point Plan for the ecological restoration of the Barnegat Bay also recognizes the SAMP as a valuable tool to improving the ecological health of the bay and its living resources as well as the economic sustainability of Barnegat Bay communities. The OCM has developed a strategy for a Barnegat Bay SAMP that will work in concert with the Governor's 10 Point Plan. Comprehensive planning for the Atlantic Ocean is addressed under the strategy for Ocean Resources. Although the development of a SAMP for the Delaware Bayshore is not being proposed at this time, the Delaware River and Bayshore will continue to be addressed through work identified in the wetlands strategy and on-going 306 activities.

Wetlands

Section 309 Enhancement Objective

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

Resource Characterization

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

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

Wetlands type	Estimated historic extent (acres) Reported in previous 309 Assessments based on first Land Use/Land Cover mapped data	Current extent (acres)	Trends in acres lost since 2006 (Net acres gained & lost)	Acres gained through voluntary mechanisms since 2006	Acres gained through mitigation since 2006	Year and source(s) of Data
Tidal (Great Lakes) vegetated	208,847[6] 186,066[7] (CAFRA) 208,770[8] 186,021 (CAFRA)	198,773 (from NJDEP 2007 LU/LC GIS Data base)	(9,997) acres Minimal loss due to regulated human activity. However, wetland loss due to erosion, sea level rise, subsidence and natural factors may be Responsible for loss shown.	232 acres[9]	N/A	The NJDEP 2007 aeriaal photography LU/LC GIS data base was used. The following Anderson codes were selected: 6111, 6112, 6120, 6130, 6141
Tidal (Great Lakes) non-vegetated	N/A[10]	N/A	N/A	N/A	N/A	N/A
Non-tidal/ freshwater	108,035[11]	104,280 (from	40.21[12] (2,981)	Unknown	173.745[13]	DEP/LUR NJEMS CZM

[6] Based on 1995-96 Land Use/Land Cover Mapping – total tidal wetland acreage
[7] Based on 1995-96 Land Use/Land Cover Mapping – tidal wetland acreage in CAFRA
[8] The 2002 Land Use Land Cover dataset is the third iteration conducted by the NJDEP to capture the state of the land use and natural land cover statewide in a digital GIS file. This land use data was based on aerial photography captured in the spring of 2002. Another land use dataset utilizing aerial photography flown in 2007 is being developed by the NJDEP. The dataset is currently in draft. The wetland acreage will be checked for changes when this dataset is finalized and released.
[9] New Jersey Meadowlands Conservation Trust – Kane Tract Mitigation Bank
[10] The NJDEP Land Use/Land Cover maps do not differentiate mud, non-vegetated land cover in wetland classification
[11] Freshwater wetlands in CAFRA
[12] Reported freshwater wetlands loss recorded in permit applications between 2006-2010 in Coastal Zone
[13] Reported freshwater wetlands mitigation gained in 1st half of 2010

in CAFRA	107,261	NJDEP 2007 LU/LC GIS Data base/ all other wetlands in CAFRA	(from NJDEP 2007 LU/LC GIS Data base/ all other wetlands in CAFRA			Report on FWW Mitigation (from NJDEP 2007 LU/LC GIS Data base/ all other wetlands in CAFRA
Other (please specify) Nearshore – Submerged Aquatic Vegetation	15,030[14]	12,810[15]	N/A	N/A	N/A	Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA) SAV Surveys

- Note: The NJDEP 2007 Aerial Photography was used to produce the 2007 Land Use/Land Cover Data Base. The data base was queried for all 'tidal wetlands' using the following Anderson code(s) and "Label07" description: 6111 (Saline Marsh- Low Marsh); 6112 (Saline Marsh – High Marsh); 6120 (Freshwater Tidal Marsh); 6130 (Vegetated Dune Communities); 6141 (Phragmites Dominate Coastal Wetlands). We were unable to select and accurately display the tidal wetlands in the CAFRA area so the acreage shown is representative of tidal wetlands statewide.
- The acreage shown for Non-tidal/Freshwater wetlands in CAFRA uses the CAFRA Boundary and all other wetlands (excluding 6111, 6112, 6120, 6130, 6141) and shows a total acreage of 104, 279.74 acres. A loss of 2,981.26 acres of loss as compared to what was previously reported. The difference may be accounted for by comparison of the data sources used – the NJEMS Report on Fresh Water Wetlands Mitigation (as reported through the NJDEP Permitting System) and the aerial photographic based Land Use/Land Cover dataset.

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

Records maintained by the Division of Land Use Regulation provide the basis for estimating permitted losses of freshwater wetlands in the Coastal Area Facility Review Act (CAFRA) area from filling, excavation, and clearing. Both general and individual permits are issued by the Division of Land Use Regulation for small disturbances to wetlands. General permits allow for work such as minor road crossings, above and below ground utility repairs, dam repairs, bank stabilization, and stream channel cleaning. From October 1, 2006 through March 31, 2010, the Division of Land Use Regulation issued general and individual permits for disturbing 40.21 acres of freshwater wetlands in the CAFRA area.

The most recent aerial photography and land use/land cover data for New Jersey is from 2007. In a report released in July 2010 titled *Changing Landscapes in the Garden State – Urban Growth and Open Space Loss in NJ 1986 thru 2007*, John E. Hasse and Richard Lathrop report the (statewide) loss of wetlands between 2002 and 2007, the most recent time period with data available for comparison, at nearly 1%. The loss is calculated from a starting acreage in 2002 of

[14] Boat-based survey conducted 1996-1999 in Barnegat Bay – reported as 6,083ha
[15] A study based on aerial imagery collected in May 2003 identified 5, 184 ha of seagrass beds – the scientists documented that 'the difference of 899 ha represents a significant change in seagrass extent between the dates of the two studies, but most likely is an artifact of the difference in mapping techniques'.

1,005,636 acres to a final 2007 acreage of 996,984 acres or a loss of 8652 acres (statewide). The report recognizes that there is an overlap in their land use analysis between wetlands and other level 1 land use types (i.e. agricultural wetlands) and accounts for the overlap by recasting the wetlands categories based on level III Anderson land use codes. The report includes a transition matrix that indicates changes in wetlands by type. For instance, statewide, 1766 acres of coastal wetlands and 1437 acres of emergent wetlands changed to water between 2002 and 2007 and 2741 acres of forested wetlands became urban land.

3. Provide a brief explanation for trends.

The land use regulations specific to activities in wetlands have been in place in New Jersey for several decades and have served to minimize the loss of wetlands due to land use disturbances. However, as the Hasse and Lathrop 2010 report cited above demonstrates, wetlands losses continue despite regulations, with some changes to urban land and extensive areas changed to open water.

The NJDEP has developed inventories of wetland types and analyzed land use/land cover changes using aerial photography. Permit databases allow the NJDEP to track the trends in wetland losses/gains attributed to permitted activities. There are, however, impacts to the health, stability and sustainability of wetlands that affect trends in the distribution of wetland populations that are not tracked through the permit tracking databases. The impacts on wetland sustainability include sea level rise, climate change, availability of sediment, water withdrawals, subsidence and nonpoint sources of pollution.

Alteration of Hydrology

Under a previous section 309 Strategy, the Coastal Management Office funded research to determine the potential impacts of Open Marsh Water Management (OMWM) on the hydrology, water chemistry, vegetation, and associated fauna of a globally imperiled Sea Level Fen ecological community in Stafford Township, Ocean County, New Jersey. Sea level fens are a unique seepage wetland that occurs within the mosaic of tidally influenced vegetation communities, located at the upland/tideland interface where fresh groundwater seepage discharges and occasional tidal inundation occurs. These communities provide significant wetland functions in the landscape as well as habitat for biological diversity, supporting 18 rare plant species of which two are listed as State Endangered. Threats to sea level fens in New Jersey include interruption of groundwater flow by ditching and local/regional groundwater withdrawal, development of adjacent upland buffer in the landscape, invasion by *Phragmites australis*, and possibly salt marsh management.

Sea level fens occur on the land immediately adjacent to *Spartina patens* dominated high salt marsh, where OMWM is used by the US Fish and Wildlife Service and Ocean County Mosquito Extermination Committee as a non-chemical mosquito control method. The purpose of the research was to determine the potential impacts of OMWM on the hydrology, water chemistry, vegetation, and associated fauna in the globally imperiled sea level fen ecological community. The results of this study resulted in the development of sea level fens as a priority listing for state land acquisition or conservation easements. The NJDEP continues to work closely with the US Fish and Wildlife Service and County Mosquito Commissions on the effectiveness of OMWM.

Sea Level Rise

The majority of New Jersey's sheltered coastline consists of tidal marshlands and a few narrow, sandy beaches, all of which naturally migrate inland as sea level rises. Many experts contend that

marshes can keep pace with a 2.5 millimeter rate of sea level rise[16], but New Jersey's current rate of sea level rise is approximately 3 to 4 millimeters per year[17], a rate that is expected to continue to increase. Tidal wetlands can no longer migrate at a simultaneous rate with the sea because coastal development, shore protection structures, and changes in sedimentation interfere with the dynamic equilibrium of the shore. In 2007 Professor Rick Lathrop and Aaron Love, Rutgers' Center for Remote Sensing and Spatial Analysis and the American Littoral Society released a report entitled Vulnerability of New Jersey's Coastal Habitats to Sea Level Rise. This report illustrated the extent and the land cover types likely to be subject to 100-year flooding under the most likely sea level rise scenario and where there were hard structures that might impede the migration of wetlands.

Currently, seawalls, bulkheads, revetments, rip-rap, gabions, and groins, are the primary form of shore protection along these tidal areas. While hardened structures typically prove to be beneficial in reducing property damage, the rate of coastal erosion typically increases near stabilization structures, impacting natural habitats, spawning grounds, recreational opportunities, and public access. Alternative forms of shoreline stabilization would provide more natural forms of protection. In order to combat coastal erosion and wetland loss along sheltered coasts, many states are mitigating the problem through the creation of *living shorelines.* "This technique was coined with the term 'Living Shorelines' because it provides 'living space' for riverine, estuarine, and coastal organisms, which is accomplished via the strategic placement of native vegetation, sand fill, organic materials, and, if necessary, a small amount of reinforcing rock seeded with oysters"[18] This technique can use numerous options, ranging from purely natural, biodegradable erosion control measures to hybrid solutions that include a combination of natural and structural stabilization.

The Coastal Management Office continues to partner with the NOAA Office of Restoration, the Partnership for the Delaware Estuary, the American Littoral Society, the Barnegat Bay Partnership and the JCNERR to investigate the use of living shorelines to limit the adverse impacts of sea level rise on sheltered shorelines and wetland habitats.

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

Wetland research and monitoring

- To fulfill the USEPA's mandate for states to establish wetlands monitoring programs by 2014 for waters of the United States the NJDEP is currently developing a 'wetland condition monitoring network.' The objectives of the programs include rapid assessments of 300 wetland sites in 2010, followed by intensified studies of 60 additional wetland sites in 2011-2012. The intensified studies will include ecological integrity assessments, long-term hydrology monitoring for water allocation permitting, phycology, sediment carbon sequestration studies, riparian over-bank flow studies and an analysis for trends in wetland conditions.

[16] Malmquist, D. (2009). *Study Reveals Threat to Tidal Wetlands.* From Virginia Institute of Marine Science. College of William and Mary. http://www.vims.edu/newsandevents/topstories/wetland_threat.php
[17] NOAA. (2008). *Mean Sea Level Trends for Stations in New Jersey*. Tides and Currents. http://tidesandcurrents.noaa.gov/sltrends/sltrends_states.shtml?region=nj

- The establishment of a collaborative effort to design the Delaware Estuary Wetland Monitoring and Assessment Program (DEWMAP) was launched in late 2009. The DEWMAP differs from state-based wetland monitoring efforts in that it takes a watershed-based perspective that is able to contrast conditions around the estuary and also consider ecosystem-level processes that sustain coastal wetlands, such as the combined freshwater inflow and associated sediments (mud) to the Estuary that help regulate salinity and marsh surface elevation. Restoration and climate adaptation planners will also be able to use DEWMAP to target limited resources to save and enhance marshes that are the most vulnerable and valuable.
- Also in 2009, an effort to broaden DEWMAP to include wetlands in other coastal bays of New Jersey was launched. Participating in this broadened initiative are the Coastal Management Office, the Barnegat Bay Partnership, the New Jersey Sea Grant Consortium, and the U.S. Fish and Wildlife Service. The collective vision is to link various existing wetland monitoring programs. This new Mid-Atlantic Coastal Wetland Assessment will establish a network of stations to monitor changes in wetland condition and function at key locations, augmented with rapid assessments of marsh condition across the region and data from satellites and other remote sensing gear.
- A study of the Delaware Bayshore began in the summer of 2010 to measure the sediment fluxes in and out of the Bay's salt marshes to try to understand sediment dynamics and to determine if the needed sediment supply is being met.
- A study of the role of salt marshes in processing estuarine carbon and nitrogen is being conducted by graduate students at the University of Delaware, Lewes, DE. The study will inform our understanding of the controls on oxygen levels in a salt marsh dominated estuary (the Delaware) and whether salt marshes release or remove carbon and nutrient species associated with oxygen demand from estuarine waters during tidal exchanges. This research will provide additional information on the causes of anoxic 'dead zones' that occur during August at the mouths of several Delaware Estuary tributary rivers. This study will also provide additional information on the role of salt marsh vegetation in sequestering carbon.
- The NJDEP Office of Science is overseeing a research project that will provide information on the pollution histories of nutrients in the Barnegat Bay system in support of NJDEP nutrient criteria development and any future restoration efforts in the Bay. In addition, specific analyses will be targeted to understand how ecological conditions may or may not have changed over the past 80 to 100+ years. Importantly, this study will help provide a timeline for ecological changes that could be used as a baseline for water quality modeling and adaptive management methods. The work involves collecting salt march cores from the tidal region of Barnegat Bay and determining the chronology of nutrient changes (nitrogen and phosphorus) and associated ecosystem level responses. Changes in various biogeochemical proxies (biogenic silica, stable isotopes of carbon and nitrogen, etc), along with changes in diatom community structure, will be used to infer changes in nutrient loading and land use throughout the watershed.
- The NJDEP actively participates in the Restore Americas Estuaries efforts to develop a greenhouse gas offsets protocol for measurement and crediting of carbon in coastal wetlands. This initiative aims to synthesize the science, as well as policy issues, and underlying greenhouse gas emissions and removal in the coastal ecosystem. The NJDEP is participating as a member of the Advisory Resource Group of the Restore Americas Estuaries Blue Ribbon Panel, providing input in terms of technical review, New Jersey based expertise, and New Jersey data.

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

Type of threat	**Severity of impacts** (H,M,L)	**Geographic scope of impacts** (extensive or limited)	**Irreversibility** (H,M,L)
Development/Fill	L- the Coastal Management Program regulates the deposition of fill and the development within 150' of the land water interface of tidal waters and wetlands.	Limited	M- the existing regulations often prevent the deposition of fill or require mitigation when the action cannot be avoided.
Alteration of hydrology	M- wetlands are very specifically regulated as are the alterations to the hydrology of the wetland areas. However, where offsight or unavoided impacts occur the severity is of moderate consequence because we can require mitigation.	Extensive - due to the extensive expanse of wetlands in the state's coastal area	M- Where avoidance is not possible the requirement for mitigation can moderate the impacts.
Erosion	H – Erosion due to sea level rise, decreased sediment budgets, unstable shorelines and coastal hazards as well as shoreline armoring pose a severe threat to coastal wetlands	Extensive – Entire coastline due to land use development patterns, hardening of (adjacent) shorelines and coastal vulnerability to storms and sea level rise.	H- the extensive geographic scope and the relatively permanent nature of the threat make the adverse impacts highly irreversible
Pollution	M- although the geographic scope of the impact is extensive, the effects on coastal wetlands are limited and addressed through nonpoint pollution abatement and buffer (to development) provisions	Extensive – Entire coastline due to land use development patterns	L- the adverse impacts of pollution can often be minimized through policy and regulatory changes that eliminate the source of the pollution
Channelization	L- due to the regulation of permitted activities	Limited	L
Nuisance or exotic species	M –although the geographic scope of the impact is extensive, the actual effects on coastal wetlands are moderate as the wetland can still maintain some ecological value and function	Extensive	M- the impacts of this threat can be minimized or reversed through restoration activities
Freshwater input	L- due to the limited geographic scope of the threat	Limited	M- while the geographical extent of this threat is limited, the adverse impacts from freshwater inputs may be addressed through restoration efforts.

Sea level rise/Great Lake level change	H- Recent studies have identified that the lack of adequate sediment budgets and subsidence have resulted in the inability of coastal wetlands to keep pace with sea level rise; in addition the development of the upland edge of wetland areas is prohibiting the ability of wetlands to migrate inshore.	Extensive	H- the adverse impacts of sea level rise, are occurring at a more rapid rate than previously identified and will be almost irreversible If restoration and adaptation responses are not put in place.
Other	N/A	N/A	N/A

Erosion:
As noted previously, tidal wetlands can no longer migrate at a simultaneous rate with the sea because coastal development, shore protection structures, and changes in sedimentation interfere with the dynamic equilibrium of the shore. Currently, bulkheads and revetments are the primary form of shore protection. As sea level rises and coastal storms increase in intensity, coastal erosion and the applications for additional bulkheads, revetments, and other hard stabilization structures are likely to increase. The addition of new erosion control structures inhibits the natural environment from adapting to sea level rise, leading to habitat loss for threatened and endangered species, the depletion of spawning grounds and natural flood protection, and the loss of carbon sequestering tidal vegetation.

Nuisance or Exotic Species:
The Coastal Management Office identified Nuisance and Exotic species as a high threat to wetlands partly due to climate change. The Pew Center on Global Climate Change reports that "climate change of the magnitude projected for the United States over the next 100 years will cause significant changes to temperature regimes and precipitation patterns across the United States. The productivity of inland freshwater and coastal wetland ecosystems will be significantly altered by increases in water temperatures. Warmer waters are naturally more productive, but the particular species that flourish may be undesirable or even harmful."

The Pew Center on Global Climate Change summarizes the following current understanding regarding the potential impacts of climate change on U.S. aquatic ecosystems[19], many of which are being experienced in New Jersey:

a. Aquatic and wetland ecosystems are very vulnerable to climate change. The metabolic rates of organisms and the overall productivity of ecosystems are directly regulated by temperature. Projected increases in temperature are expected to disrupt present patterns of plant and animal distribution in aquatic ecosystems. Changes in precipitation and runoff modify the amount and quality of habitat for aquatic organisms, and thus, they indirectly influence ecosystem productivity and diversity.

b. Coastal wetlands are particularly vulnerable to sea-level rise associated with increasing global temperatures. Inundation of coastal wetlands by rising sea levels threatens wetland plants. For many of these systems to persist, a continued input of suspended sediment from inflowing streams and rivers is required to allow for soil accretion.

c. Most specific ecological responses to climate change cannot be predicted, because new combinations of native and non-native species will interact in novel situations. Such novel interactions may compromise the reliability with which ecosystem goods and services are provided by aquatic and wetland ecosystems.

[19] Pew Center on Global Climate Change, *Aquatic Ecosystems and Global Climate Change*

d. Increased water temperatures and seasonally reduced stream flows will alter many ecosystem processes with potential direct societal costs. For example, warmer waters, in combination with high nutrient runoff, are likely to increase the frequency and extent of nuisance algal blooms, thereby reducing water quality and posing potential health problems.

Hydrology

Alteration of hydrology has been identified as a medium threat due to the concern about altered wetlands hydrology. Wetlands hydrology can be altered by development, including stormwater infrastructure. In addition, the natural freshwater hydrologic cycle is being modified by the discharge into the ocean of wastewater from treatment plants rather than into the freshwater system from which water was withdrawn for use.

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

Habitat type	**CMP has mapped inventory** (Y or N)	**Date completed or substantially updated**
Tidal (Great Lakes) Wetlands	Yes	1977 Upper Wetlands Boundary & Tidelands Mapping;1986, 1996, 2002, 2007 LU/LC Mapping; USF&WS NWI; 2009 LiDAR for South Jersey 3 – county area
Beach and Dune	Yes	1986, 1996, 2002, 2007 LU/LC Mapping,
Nearshore	Yes	2009 Delaware Bayshore Benthic Mapping & Substrate Mapping; 2009 Rutgers University (CRSSA) SAV mapping in Barnegat Bay
Other (please specify)	N/A	N/A

7. Use the table below to report information related coastal habitat restoration and protection. The purpose of this contextual measure is to describe trends in the restoration and protection of coastal habitat conducted by the State using non-CZM funds or non Coastal and Estuarine Land Conservation Program (CELCP) funds. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

Contextual measure	**Cumulative acres for 2004-2010**
Number of acres of coastal habitat restored using non-CZM or non-Coastal and Estuarine Land Conservation Program (CELCP) funds	15.5 acres of tidal Marsh in Woodbridge Creek

Number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds	6600.70 acres (State Land Acquisition 2004 – March 2010)[20]; through Local and Not for Profit Land Acquisition (Green Trust Program) 4,301 acres acquired.

Management Characterization

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

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

Management categories	**Employed by state/territory**(Y / N)	**Significant changes since last assessment (2006)**(Y or N)
Wetland regulatory program implementation, policies, and standards	Yes	Yes – Adopted changes in response to Environmental Enforcement Act (2008)
Wetland protection policies and standards	Yes	No
Wetland assessment methodologies (health, function, extent)	Yes	Yes – statewide monitoring; climate impacts; coring
Wetland restoration or enhancement programs	Yes	Yes
Wetland policies related public infrastructure funding	Yes – Flood Hazard, Riparian Buffers, Infrastructure Trust, DOT	No
Wetland mitigation programs and policies	Yes	Yes- GP Mitigation Proposal
Wetland creation programs and policies	Yes	No
Wetland acquisition programs	Yes	No
Wetland mapping, GIS, and tracking systems	Yes	Yes – LiDAR, NWI, Updated Land Use Mapping
Special Area Management Plans	Yes – NJ Meadowlands SAMP	No
Wetland research and monitoring	Yes	Yes – Statewide Monitoring in partnership with National Estuary Programs
Wetland education and outreach	Yes	No
Other (please specify)	N/A	N/A

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

[20] Habitat protected through acquisition (in fee or easement) in CAFRA Water: 450.37 acres; Uplands 1,507.32 acres; Coastal Wetlands 1,977 acres; Freshwater Wetlands 2,665.16 acres.

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

c) Characterize the outcomes and effectiveness of the changes.

Wetland regulatory program implementation, policies, and standards

a) The NJDEP adopted amendments and a new rule at N.J.A.C. 7:7A-16 to incorporate and implement changes to the Freshwater Wetlands Protection Act made by P.L. 2007, c 246, commonly known as the Environmental Enforcement Enhancement Act.

b) These changes were not were driven by 309 or other CZM changes or efforts.

c) Among the changes effected in the Freshwater Wetlands Protection Act by the Environmental Enforcement Enhancement Act are an increase in the maximum penalty from $10,000 to $25,000, a lengthened time of 35 days (as compared to 20 days) in which a person may request a hearing to challenge an administrative enforcement action, and the explicit inclusion of the alleged violator's conduct as a basis for assessing a penalty (in addition to violation type, seriousness, and duration).

Wetland assessment methodologies (health, function, extent)

a) The State is currently conducting research and evaluation of rare and vulnerable wetland types through the Natural Heritage Program under several USEPA Wetlands Protection Development Grants. Each of the research projects includes Level 3 Intensive Site Assessments and has components of inventory, ecological community classification, and baseline monitoring of vegetation and hydrology.

To fulfill the USEPA mandate for states to establish wetlands monitoring programs by 2014 for waters of the United States, and to explore metrics for water quality reporting (rather than qualitative assessment methods), NJDEP, in collaboration with Rutgers University, is conducting research on quantitative wetland biological assessment methods. A goal of this research is to develop a wetlands index of biological integrity for New Jersey. Research has focused on riparian forested wetlands with special attention given to vegetative species and macroinvertebrates in an effort to possibly link the assessment to NJDEP's macro invertebrate data for streams (AMNET).

b) The development of a monitoring and assessment strategy for coastal wetlands has been driven by activities identified under Section 309.

c) Integrating a wetland monitoring and assessment program into New Jersey's existing surface and groundwater monitoring programs and existing programmatic framework is important for building a comprehensive, sustainable and holistically informative monitoring program. In addition, monitoring and assessing the State's wetland mitigation enhancement, restoration and creation projects is crucial to ensuring that the values and functions of wetlands lost through permit decisions are adequately compensated for. Standards will be developed for the purpose of assessing the State's wetland.

Wetland restoration or enhancement programs

a) Although New Jersey does not have a statewide restoration plan, various place-based programs such as the National Estuary Programs have started to develop restoration and enhancement plans specific to their geographic region.

The New York/New Jersey Harbor Estuary Program released its *Comprehensive Restoration Plan for the New York-New Jersey Harbor Estuary* in February of 2010. The *Comprehensive*

Restoration Plan for the New York-New Jersey Harbor Estuary was developed as part of the Hudson-Raritan Estuary Ecosystem Restoration Study by the U.S. Army Corps of Engineers – New York District. The Plan addresses the 1000 miles of estuary coastline and has a goal of achieving 28,000 acres of wetlands to be created or restored.

The Partnership for the Delaware Estuary released *A Blueprint for a Regional Restoration Initiative in the Delaware Estuary* in March of 2008. The goal of the blueprint was to address the 'fragmented restoration efforts' in the region and approach restoration from a region-wide perspective and ensure the functionality of the wetland system. An element of the restoration plan was to develop a project registry that can prioritize projects and link them with available funding sources.

b) These changes were not driven by 309 or other CZM changes or efforts.

c) The development of restoration plans helps to focus attention on restoring regional landscapes as well as the functionality of wetland systems. Intact contiguous wetlands systems result in habitat, water quality and storm protection benefits.

Wetland mitigation programs and policies

a) Amendments to the Freshwater Wetlands Protection Act rules N.J.A.C. 7:7A-5.2, 5.6, 5.10A, 5.10B, 5.11, 5.21, 5.27 and 15.11 to establish mitigation requirements for general permits were adopted on September 24, 2009. The mitigation requirement for all of these general permits is that the mitigation must be performed for permanent loss and/or disturbance of 0.1 acre or greater. For permanent loss or disturbance of less than 0.1 acres, the NJDEP will determine on a case-by-case basis whether or not to require mitigation. The NJDEP will make its determination based upon whether the applicant can demonstrate that all activities have been designed to avoid and minimize impacts to wetlands.

The NJDEP requires compensatory mitigation for activities in wetlands that involve investigation, cleanup, or removal of hazardous materials, the installation of underground utility lines, the closing of landfills, redevelopment projects as well as activities requiring Individual Permits (activities that exceed the requirements of General Permits). Mitigation of wetlands impacts is achieved through wetland creation, restoration, enhancement, monetary contribution, or preservation. The NJDEP includes performance standards as permit conditions in every permit that requires mitigation. Also, the NJDEP website contains a checklist of standard monitoring requirements that ensure quality assessments of the status of the mitigation sites.

Revisions to the Freshwater Wetlands Protection Act regulations require that a mitigation project must have a high probability of long-term success. This necessitates, at minimum, adequate dedicated financial resources to complete the project; a design that takes advantage of and fits into the watershed; the presence of adequate hydrology and soils that will support a hydric community; and long term stewardship of the mitigation area.

The revised mitigation section of the rules also requires 20% additional mitigation for each year after the initial mitigation start date until the mitigation is performed. The goal of this rule change is to stimulate compliance with the requirement that mitigation occur prior to or concurrent with the wetland disturbance.

The mitigation rules have also been updated to define the critical components of a complete wetland mitigation proposal. These components are detailed on a checklist for the purposes of improving the quantity and quality of wetland mitigation through the preparation of consistent

detailed plans. The checklist requires a detailed water budget, soil amendments, preventative maintenance/adaptive management strategies; and detailed landscape and grading plans.

The NJDEP requires wetland mitigation construction meetings to ensure that the approved plan is being properly executed. Also, following completion of construction, the wetland mitigation designer must sign a "Construction Completion Form" that holds the designer responsible for assuring that the plan was properly followed.

b) These changes were not driven by 309 or other CZM changes or efforts.

c) These changes are expected to improve the success rate of wetland mitigation in New Jersey, by providing clearer guidance based on experience with mitigation projects to date.

New Jersey Meadowlands Wetlands Mitigation Bank

a) May 2010 saw the 'groundbreaking' for the Kane Tract Mitigation Bank in the New Jersey Meadowlands. This 587-acre natural site was slated for development as a shopping mall where close to 200 acres of wetlands would have been filled. It is now preserved and currently 232 acres are being restored. This site has long been designated for mitigation to offset wetland impacts for regional transportation projects within the Meadowlands District.

b) These changes were not driven by 309 or other CZM changes or efforts.

c) The property is owned by the Meadowlands Conservation Trust, ensuring that it is protected in perpetuity and open to the public for passive use. With the launch of the restoration project the mechanism to mitigate wetland losses is now in place. Projects undertaken by NJ Transit, the NJ Turnpike Authority and the Port Authority of NY/NJ will be able purchase mitigation credits from the bank. This money is being used to fund the restoration of the site to include native plants and trees, freshwater areas and a tidal ecosystem.

Mapping/GIS/Tracking Systems

a) The NJDEP has committed resources to establish a Wetland Mitigation Unit whose responsibility is to manage the State's wetland permit/mitigation database. The database contains information on over 1000 wetland mitigation sites. It was created using Access 2003 software and contains detailed information for permits including: Permit number, Location, Applicant/agent, Permit analyst, Impact type, Wetland class, Status, Date received/issued/denied, Additional comments, notes, unresolved issues, Actions taken, date, Enforcement actions. The tracking system is able to link the permit/mitigation database directly to other files such as letters in a WORD document, excel files, relevant emails, scanned documents and photographs. A link to a GIS database is not yet enabled, but the NJDEP is continuing to explore this option. The NJDEP is aware of the need to better track the financial assurances and is in the process of adding relevant fields to the NJEMS database including information on the assurance type (escrow, bond, letter of credit, etc.), date, release date and issuing agency. The NJDEP is in the process of converting the information stored in the Access Database into the NJEMS database. The NJEMS database is used by all NJDEP offices and therefore better insures the protection of these wetland off-sets.

b) These changes were not driven by 309 or other CZM changes or efforts.

c) The database, when complete, will include extensive mitigation related data for individual mitigation sites, as well as mitigation banks. Some of the data available will include site name, number, and location; mitigation bank name, number of credits, wetland type; number of credits still available, and used credits; and closing date for the bank. This will help ensure that New Jersey is successfully achieving functionally equivalent wetlands to replace those that are lost.

Light Detection and Ranging (LiDAR)

a) During 2008 -2009 the NJCMP entered into a joint agreement to acquire LiDAR mapping of three South Jersey Counties (Cape May, Cumberland and Salem). The LiDAR was flown at +/- 3 hours of mean low water in order to capture the intertidal mud flats, and to analyze the effects of water level rise, surge and the elevation of the vegetated marsh.

b) This was a 309 driven change.

c) This data set has provided the foundation for the development of detailed monitoring and assessment strategies of coastal wetlands. The assessments will provide information on the elevation of wetland areas in relationship to tidal watercourses and include health, areal extent and characterize the impacts of climate change and response to sea level rise.

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

Habitat type	**CMP has a restoration plan** (Y or N)	**Date completed or substantially updated**
Tidal (Great Lake) Wetlands	No	-
Beach and Dune	No	-
Nearshore	No	-
Other (please specify)		

Priority Needs and Information Gaps

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

Gap or need description	**Select type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach)	**Level of priority (H, M, L)**
Alternative strategies to hardened shorelines	Regulatory, data	H
Restoration and wetland adaptation strategies in response to sea level rise	Regulatory, data	H

Enhancement Area Prioritization

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

High _____
Medium _X___
Low _____

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

In consideration of the above information the Coastal Management Office has given the Wetlands enhancement area a Medium priority which reflects the suitability of Section 309, with its emphasis on program changes, for addressing the underlying issues identified. The New Jersey Coastal Management Program has strict regulatory policies in place with regard to the development on, in or near coastal and freshwater wetlands. The Office of Coastal Management recognizes the importance of wetland ecosystems to the coastal zone of New Jersey and will continue to put additional efforts towards the monitoring of wetlands, the impacts of sea level rise and coastal hazards and the development of adaptation strategies.

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

Yes **X**
No _____

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

Coastal wetlands are a major component of the coastal ecosystem that provide multiple ecosystem services as well as a first defense against coastal storms and a rising sea level. A strategy has been developed to evaluate and encourage alternative shoreline stabilization techniques that maintain existing wetlands and support tidal wetlands restoration. In addition wetlands conservation and restoration will play a major role in the development of the 309 enhancement strategy outlined under the Barnegat Bay SAMP.