# New Jersey Coastal Management Program
# Section 309 Assessment & Strategy
# 2016 – 2020

New Jersey Department of Environmental Protection
Office of Coastal and Land Use Planning
401 East State Street
P.O. Box 420, Mail Code 401-07C
Trenton, New Jersey 08625-0420

# Table of Contents

# I. Summary

## Coastal Zone Enhancement Program

The 1972 Federal Coastal Zone Management Act (CZMA) created a voluntary partnership between federal and state governments to provide responsible development in coastal areas and to conserve coastal resources. As an amendment to the CZMA, the 309 Coastal Zone Enhancement Grant Program was developed to encourage states to enhance their Coastal Management Programs (CMP) in one or more of nine areas. These "enhancement areas" include wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans, ocean and Great Lakes resources, energy and government facility siting, and aquaculture.

## Section 309 Assessment and Strategy

To receive Section 309 grant funding, the State must evaluate its CMP in the nine enhancement areas every five years through a process known as the Section 309 Assessment and Strategy. Based on assessment of the CMP in the nine enhancement areas, States develop a comprehensive five-year strategy to address issues where enhancement of the CMP is a high priority. New Jersey initiated the 2016-2020 Section 309 Assessment and Strategy on October 1, 2014. This process includes stakeholder engagement and close coordination with NOAA's Office for Coastal Management (OCM). The draft Section 309 Assessment and Strategy is due to NOAA on May 1, 2015 with the final document due on September 1, 2015.

## Enhancement Area Assessment

1. Aquaculture (High Priority)

   Over the past five years, New Jersey has had a significant increase in aquaculture lease areas, with 1,742 leases, 319 leaseholders covering 35,226 acres and three new Aquaculture Development Zones designated in 2012. A large part of New Jersey's shellfish aquaculture industry has shifted from traditional methods including hard clam screening, shell-planting, seed transplant and re-harvest, to non-traditional and more intensive aquaculture including the use of equipment such as floating upwellers, shellfish rafts, and rack and bag systems. These shifts in techniques, specifically the interest in non-traditional aquaculture, raise issues that are not addressed through existing regulations.

   The recent federal listing of the Red Knot as a Threatened Species under the Endangered Species Act will prompt a close examination of impacts to that species and their primary food sources near structural aquaculture systems, such as rack and bags, in the Delaware Bay.

2. Ocean Resources (High Priority)

   The demands placed on the ocean environment continue to increase and accentuate the need to coordinate and plan for the protection and use of ocean resources in a comprehensive manner to ensure the sustainability of the ocean ecosystem of New Jersey and the Mid-Atlantic region. Examples of increasing demands include alternative and conventional energy, offshore sand mining, seismic surveys, and aquaculture. There is a need to improve current collaboration on research, data collection, communication, and regulatory processes between multi-state and federal agencies.

3. Wetlands and Living Shorelines (High Priority)

According to New Jersey 2012 Land Use/Land Cover data (LU/LC), there were 857,672 acres of wetlands (both salt and freshwater) in New Jersey coastal counties in 2012. Between 2007 and 2012 the State had a 0.29% net loss of wetlands in those coastal counties, including a 0.12% net gain in saltwater wetlands.[1] Additionally, the New Jersey 2012 LU/LC data for those coastal counties, between 2007 and 2012, indicates the following:

- 2.58 square miles of wetlands were converted to development;
- 2.89 square miles of wetlands were converted to water; and
- 2.17 square miles of wetlands were converted to barren land.

The extent and condition of our changing wetlands and shorelines needs to be further assessed through studying the relationships among local conditions, functions, and stressor impacts in order to improve resource management strategies and enable the most effective use of ecologically based hazard mitigation strategies.

Superstorm Sandy severely impacted New Jersey's wetlands due to storm surge, flooding, and erosion. The State is encouraging ecologically-based solutions through the establishment of living shorelines to restore natural areas and mitigate the future loss of property rather than hard armoring shorelines as the sole solution. Living shorelines and other ecologically based hazard mitigation strategies are alternative shoreline stabilization methods that add diversity to other shore protection measures. To address the loss of vegetated shorelines and habitat in the littoral zone, the Department adopted regulatory amendments to its Coastal Permit Program Rules and Coastal Zone Management rules (coastal rules)[2] to facilitate the establishment of living shorelines in New Jersey. Efforts are underway to pilot their use, develop guidance, and monitor the success of these ecologically-based resiliency techniques.

4. Coastal Hazards (High Priority)

NOAA coastal hazard tools show hundreds of thousands of New Jersey's residents live in vulnerable areas; 67% of New Jersey's coastline is at high or very high risk to coastal erosion; and 60% of the coastline is projected at high or very high risk to sea level rise. New Jersey's Coastal Vulnerability Index (CVI) mapping shows over 550,000 acres as highly vulnerable to coastal hazards.

In response to Superstorm Sandy, the Department adopted regulatory amendments to the Flood Hazard Area Control Act Rules and coastal rules in 2013. The changes to the coastal rules were intended to facilitate the expeditious rebuilding of more resilient coastal communities and coastal-related industries, and help facilitate the recovery of the coastal ecosystem. The New Jersey Coastal Management Program (NJ CMP), through the CZM rules, will continue to steer development away

[1] The acreage figures cited are based upon a comparison of Land Use /Land cover types complied by NJDEP in 2007 and 2012 using GIS mapping. Due to changes in photo interpretation mapping protocols, the time of the baseline photo-imagery, tidal forces and land use practices, some areas mapped in 2007 as falling within a cover type have been remapped as a different cover type. Additionally it is noted that the NJDEP's wetland mapping is used for guidance and does not reflect jurisdictionally verified wetland boundaries. As a result, the changes noted in the extent of wetlands by this mapping may not accurately reflect changes enabled by permitted activities, which are based upon onsite wetland delineation determinations.

[2] On July 6, 2015, the Department adopted regulatory amendments, repeals, and new rules which consolidate the Coastal Permit Program Rules and the Coastal Zone Management Rules into one chapter, the Coastal Zone Management (CZM) rules, codified at N.J.A.C. 7:7. The consolidated chapter establishes a comprehensive and streamlined set of rules governing land use in the coastal area. For the purposes of this document, the term "coastal rule(s)" refers to the Coastal Permit Program Rules and/or Coastal Zone Management rules that were in effect prior to the July 6, 2015 adoption and the term "CZM rules" refers to the consolidated chapter adopted July 6, 2015.

from naturally hazardous and sensitive areas, protect estuarine and marine environments from adverse impacts, and promote resource conservation and designs sensitive to the environment.

The State of New Jersey, NJDEP, and NJCMP have pursued and been successful in obtaining, significant Federal Hurricane Sandy Recovery Funds and assistance for homeowners, communities, infrastructure, businesses, and ecological restoration.

5. Cumulative and Secondary Impacts (High Priority)

Between 2006 and 2010, impervious cover in coastal counties increased almost 2%, while forest cover and wetlands continued to be lost to development. The Department recognizes the importance and value of addressing cumulative and secondary impacts and does so through regulatory programs that review individual projects. During this assessment period, the State proposed a New State Strategic Plan to replace the current State Development and Redevelopment Plan and Map that would require the NJCMP to reevaluate its method of coordinating local and regional land use planning with the objectives of the NJCMP. In addition, Superstorm Sandy emphasized the need to assist coastal communities in understanding coastal hazard vulnerability and to identify new planning approaches that can create resilient and sustainable communities. Current processes, including Plan Endorsement with the State Plan, and CAFRA center designation under CZM rules, that work toward achieving a balance in human and natural resource protections in the coastal zone, will need to be modified moving forward to incorporate resiliency and address changes in the broader State planning processes.

6. Energy and Government Facility Siting (Medium Priority)

While this enhancement area is important to the NJCMP, it will be addressed under current regulatory processes and other enhancement area strategies.

7. Marine Debris (Medium Priority)

New Jersey has initiated several actions to reduce the amount of debris entering our oceans and accumulating along our shorelines. These include, but are not limited to, the NJDEP Clean Shores Program, a statewide program that removes floatables such as wood, garbage, medical waste and recyclables from tidal shorelines with the use of state inmate labor. Since its inception in 1989, the program has removed over 127 million pounds of floatables and cleaned and re-cleaned over 2400 miles of New Jersey's shorelines. Other New Jersey programs that target reduction of marine debris include the Barnegat Bay Blitz; the “Don’t Waste Our Open Space” initiative; prioritized Environmental Infrastructure Trust funding for stormwater projects; changes to the stormwater management rules including green infrastructure requirements; changes to municipal stormwater permit requirements; changes to the individual combined sewer overflow permit; and the release of the Disaster Debris Management Planning Tool Kit to guide municipalities on planning for storm debris removal. The State also participates in numerous regional partnerships and federal programs to monitor and address marine debris in the NY/NJ/DE region.

The NJCMP will address marine debris issues identified by both internal and external stakeholders through 306 funding and in coordination with other NJDEP programs.

8. Public Access (Medium Priority)

   Protecting the public's right to access the State's tidal waters has always been a vital part of the NJCMP's vision. Maintaining public access to tidal waters is a goal and a requirement of the CZM rules. In 2012, the coastal rules were amended to address when and how public access to tidal waters and their shorelines would be required. As a result of these regulatory amendments, municipalities can develop Municipal Public Access Plans (MPAPs) to address public access in their community in a manner consistent with local planning objectives and state regulatory requirements. Currently, over 25 MPAPs are being developed to inventory existing public access locations and facilities, as well as outlines an implementation strategy that maintains existing access and allows local public access goals to be achieved. Moving forward, public access and the adoption of MPAPs will continue to be a priority of the NJCMP.

9. Special Area Management Plans (Low Priority)

   The NJDEP is implementing a comprehensive environmental management approach through regional projects such as the Governor's Barnegat Bay Action Plan and other existing programs.

The NJCMP is proposing the following strategies to address priority issues over the next five-year period.

1. Ocean Resources

   Coupled with the need for better management of existing uses and resources, it is clear that in order for New Jersey to protect and enhance its ocean resources, uses, and economy, the NJCMP will continue to focus attention on ocean resources management. This will include continuation of efforts with MARCO, the Mid-Atlantic RPB, and federal agencies to enhance coordination with stakeholders, while planning and providing for existing and emerging ocean uses, including offshore energy development, in a sustainable and resource protective manner that minimizes conflicts, improves effectiveness and regulatory predictability, and supports economic growth. As part of this collaboration, the NJCMP will identify ways to better coordinate across the Mid-Atlantic region and develop collaborative research, mapping, and enhanced intergovernmental processes with states and federal agencies. Potential program enhancements include surveys and mapping of high ecological/use value coastal resources, and improved and better coordinated processes related to federal activities with potential impact to our waters.

2. Wetlands and Living Shorelines

   As the State rebuilds after Superstorm Sandy, expanded use of ecologically-based hazard mitigation strategies will be pursued. The development and implementation of an adaptive environmental management strategy focused on protection and restoration of coastal shorelines and marshes to improve coastal community resiliency and enhance habitat is one of the goals of the NJCMP and NJDEP.

   The NJDEP will support research and assessment of wetlands and shorelines, and implementation of ecologically based hazard mitigation strategies and pilot projects, monitor strategy effectiveness, and evaluate the need for regulatory amendments. The NJCMP will leverage its existing work with partners on various grants to address data gaps and establish mechanisms that advance the adaptive management of coastal wetlands and expand the use of living shorelines.

3. Coastal Hazards and Secondary and Cumulative Impacts

The proposed enhancement strategies resulting from Cumulative and Secondary Impacts will be incorporated into the Coastal Hazards Strategy, as there is significant overlap of the issues including updating techniques, planning, and programs that foster sustainable and resilient coastal communities. The proposed new strategy integrates the NJCMP's resiliency planning and the center-based planning in the CAFRA area into a single unified program. Under this environmental management program, planning for CAFRA centers will incorporate assessment of community vulnerability to coastal hazards, and identify specific municipal actions to address those vulnerabilities. Further, this program may be proposed as an enforceable policy that integrates planning for coastal hazards, center-based development, and defined conservation and ecologically-based mitigations.

The NJCMP will continue to implement its Coastal Hazards strategy of building a Resilient Coastal Communities program through its multiple ongoing efforts. These efforts include development of tools and guidance for municipal use, communication of guidance and information, and close coordination with existing partnerships with academic institutions, non-profit organization, and regional agencies.

The NJCMP will develop a new Cumulative and Secondary Impacts strategy that includes working with coastal communities to identify and appropriately plan for CAFRA/coastal centers and resource protection. The existing process incorporates protection of coastal resources while planning for growth and economic development. Efforts moving forward will incorporate resiliency, sustainability, and ecological solutions into the planning framework.

NJDEP regulatory programs stipulate that special protections must be afforded to habitats which encompass high value coastal resources such as shellfish and submerged aquatic vegetation beds. Current and consistent State-wide information upon which to base permit decisions, resource restoration initiatives, and long range habitat protection plans is needed to enable effective high value coastal resource protection. The NJCMP will work towards filling data gaps and improving planning, incentive based programs and regulatory use of updated information. This information is intended to inform efforts with coastal communities to plan for reduction of secondary and cumulative impacts, updated data for regulatory decision making, and identification of potential areas for aquaculture use designation.

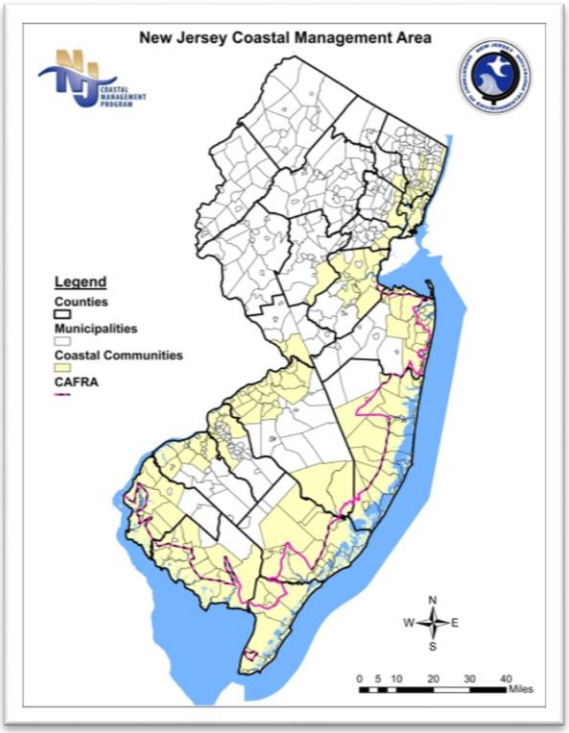
4. Aquaculture

A Shellfish Aquaculture Working Group – comprised of staff of the New Jersey Department of Health, the Economic Development Authority, the Department of Agriculture, Rutgers Cooperative Extension, U.S. Army Corps of Engineers (USACE), U.S. Food and Drug Administration, Jacques Cousteau National Estuarine Research Reserve (JC NERR), Atlantic Coast and Delaware Bay Shellfisheries Councils, Aquaculture Advisory Council, and the Department of Environmental Protection's Bureau of Shellfisheries, Division of Land Use Regulation, Bureau of Tidelands Management, Bureau of Marine Water Monitoring, NJ Fish and Wildlife Marine Enforcement, the NJDEP Small Business Environmental Assistance Program – was established to assess emerging aquaculture needs, while continuing to support the existing industry. Emerging issues outlined in the assessment relate to industry expansion and change in shellfish aquaculture methods. Strategies to address these issues include development of new spatial data and best management practices that encourage aquaculture, protect special resource areas, and examine the need for changes to existing regulations.

# II. Introduction

## New Jersey Coastal Management Program

The NJCMP is a networked program comprised of many offices within the Department of Environmental Protection (NJDEP) with the shared responsibility of managing New Jersey's coastal resources. Through the NJCMP, the NJDEP manages the state's diverse coastal areas which include portions of 17 counties and 239 municipalities. The coastal boundary of New Jersey encompasses the CAFRA area, the New Jersey Meadowlands District, and all coastal waters to the limit of tidal influence. A goal of the Program is ensuring that coastal resources and ecosystems are conserved to enhance sustainable coastal communities. A description of the offices within the NJDEP that are part of the networked NJCMP follows.




The Office of Coastal and Land Use Planning (OCLUP) administers the planning and enhancement aspects of New Jersey's federally approved CMP. OCLUP staff develops and implements long range planning projects, and coordinates with complementary programs having similar interests and initiatives in the coastal area. These complementary programs include the JC NERR, and three national estuary programs - Delaware Bay, NY/NJ Harbor, and the Barnegat Bay, as well as the coastal programs of adjacent states. Staff also provides technical advice to other NJDEP programs regarding existing coastal resource management policies. Staff works with municipal, county, and state government, as well as non-profit groups on non-point pollution abatement projects. OCLUP staff also administers and reports on Coastal Zone Management Grants.

The Division of Land Use Regulation (DLUR) reviews coastal permit applications submitted to the NJDEP under the Coastal Area Facility Review act (CAFRA), the Waterfront Development Law, and the Wetlands Act of 1970. DLUR also reviews permit applications submitted under the Freshwater Wetlands Protection Act, Flood Hazard Area Control Act, and conducts Federal Consistency reviews. The Bureau of Tidelands Management, which is part of DLUR, serves as a member of the Tidelands Resource Council. The Council is responsible for conveyance of State-owned tidelands. The Office of Dredging and Sediment Technology functions in an equivalent capacity for dredging and port development projects. The Division of Fish and Wildlife, the Historic Preservation Office, and other NJDEP offices, provide technical assistance for these application reviews when needed.

The Office of Policy Implementation (OPI) is responsible for the development and promulgation of the rules and regulations that govern the Division of Land Use Regulation, including: the Coastal Zone Management rules, N.J.A.C. 7:7; Flood Hazard Area Control Act Rules, N.J.A.C. 7:13; and the Freshwater Wetlands Protection Act Rules, N.J.A.C. 7:7A. OPI is also responsible for the preparation and submission of all program changes related to the NJCMP. Further, OPI conducts stakeholder

outreach and education related to the land use regulations. The Office is also responsible for coordinating all Federal consistency reviews.

The Bureau of Coastal and Land Use Enforcement investigates possible coastal and freshwater wetland violations and seeks remedies for violations. The Bureau is also responsible for ensuring compliance with coastal, freshwater wetlands, and flood hazard area permits issued for projects throughout the coastal area.

The Engineering and Construction Program manages coastal area dredging and shore protection projects, and manages the Aids to Navigation program. Shore protection projects include beach replenishment, bulkhead installation and groin modification. Engineering and Construction also participates with the US Army Corps of Engineers on all Corps sponsored shore protection projects in New Jersey.

The NJ Green Acres Program was established to address New Jersey's growing recreation and conservation needs. The primary focus of Green Acres is acquisition of land linking existing protected areas to create open space corridors. These corridors provide valuable contiguous linear habitat that facilitates movement of wildlife, parkland for recreation, and areas of scenic benefit between towns and urban centers. Many of these lands are in the coastal zone. In addition, the Coastal Blue Acres Program was created with the passage of the Green Acres, Farmland, Historic Preservation and Blue Acres Bond Act of 1995. That Act provides grants and loans to municipalities and counties to acquire coastal lands for recreation and conservation that are storm damaged, prone to storm damage or that buffer or protect other lands from storm damage.

## About the Section 309 Enhancement Program

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

Every five years, states and territories are encouraged to conduct self-assessments of their CMPs to determine problems and enhancement opportunities within each of the nine enhancement areas—and to assess the effectiveness of existing management efforts to address identified problems. Each CMP identifies high priority management issues as well as important needs and information gaps the program must fill to address these issues.

Following this self-assessment, NOAA's OCM, works closely with each CMP to further identify the high priority needs for improvement within one or more of the nine areas. The CMP then develops strategies, consulting with OCM, to improve its operations to address these management needs. The strategies provide a step-by-step approach to reach a stated goal leading to an enhancement in the state's or territory's federally approved CMP.

OCM reviews and approves the Section 309 "assessment and strategy" document for each state and territory and, after approval, provides funding under Section 309 to help them carry out those strategies.

# III. Summary of Recent Section 309 Achievements

This section provides a brief summary of select accomplishments completed under the Section 309 Program since the last Assessment and Strategy. New Jersey's Section 309 Strategy completed in 2011 sought to enhance the management of Ocean Resources, Public Access, Wetlands, and Special Area Management Plans. Following the devastation wrought by Superstorm Sandy in 2012, New Jersey amended its Section 309 Strategy to add a strategy for Coastal Hazards and Cumulative and Secondary Impacts.

## Public Access

New Jersey's 2011-2015 Public Access Strategy was the development and adoption of revisions to the coastal rules. Specifically, New Jersey proposed to restructure when and how it requires public access to tidal waters and their shorelines.

Regulatory Amendments

On April 4, 2011, the NJDEP proposed regulatory amendments to restructure when and how it requires public access to tidal waters and their shorelines under the Coastal Permit Program Rules, N.J.A.C. 7:7, and the Coastal Zone Management rules, N.J.A.C. 7:7E. Significant stakeholder outreach was conducted during and following the public comment period on the rule proposal.

These regulatory amendments were adopted November 5, 2012. As a result, municipalities now have the option to develop a Municipal Public Access Plan (MPAP) that guides public access consistent with the vision and needs of the community instead of the NJDEP determining the public access requirements on a site-by-site and permit-by-permit basis. When a MPAP is deemed by the NJDEP to be consistent with the CZM rules and is adopted into the municipal master plan, all NJDEP-approved development along tidal waterways and their shores within that municipality will be required to provide public access consistent with the MPAP. The public access rule additionally allows municipalities that adopt a MPAP to establish a municipal Public Access Fund which will receive monetary contributions in lieu of providing on-site access in those cases where it is deemed appropriate. These contributions can then be used by the municipality to enhance public access as outlined in their MPAP.

Municipal Public Access Planning Program

To help navigate these rule changes, and to successfully implement the 309 Strategy, the OCLUP implemented the Public Access Planning Program. This program includes a number of tools to assist the public, and to help municipalities develop MPAPs, including a comprehensive public access website. The website was developed to provide the public with information about public access and includes information on the Public Trust Doctrine, the public access rule and guidance, planning tools, flow charts outlining the NJDEP's process for review and approval of MPAPs, including the public comment process, references to other area plans, contact information including a listserv feature, and MPAPs that are under review or that have been approved by the NJDEP. In addition, a static (jpeg) New Jersey public access location map is being replaced with an interactive map that is continuously updated.

To help guide municipalities in their development of MPAPs, OCLUP created a MPAP template based on the minimum rule criteria and offered planning assistance to all 231 eligible municipalities. In the fall of 2012, in anticipation of adoption of the regulatory amendments, OCLUP provided 50 municipalities with preliminary MPAPs which consisted of the MPAP template filled in with basic municipal information

and two maps showing the municipality's tidal waterways, and a preliminary public access location inventory created from NJDEP GIS data.

Municipal Public Access Planning and Coastal Vulnerability Assessment Grant Program

Days before the rule amendments were adopted; Superstorm Sandy devastated New Jersey, delaying municipal development of MPAPs. Municipalities understandably saw recovery from the storm as a higher priority than development of a MPAP. To incentivize the development of MPAPs, the Municipal Public Access Planning Grant Program was established. Upon amendment of the Public Access Strategy to include the Coastal Hazards task, this grant program was supplemented with additional funding to allow for the optional development of a municipal Coastal Vulnerability Assessment. At the time of writing, grants were provided to 20 municipalities, and another 9 grant awards were recently announced.

## Wetlands

New Jersey's 2011-2015 Wetlands Strategy was the development of a Living Shorelines Strategy. Specifically, the NJCMP proposed to identify adaptive and/or alternative shoreline stabilization strategies to protect and enhance tidal wetlands, as well as to identify the geographic areas and situations best suited to the implementation of the strategies.

Living Shoreline Strategic Direction

The NJCMP has developed a Living Shoreline Strategic Direction for the development of living shoreline opportunities within New Jersey's coastal zone. The goal of the Strategic Direction is to develop, encourage, and effectively implement living shorelines and related ecologically-based hazard mitigation strategies and policies tailored to New Jersey's coastal environment. The methodologies and policies developed address excessive shoreline erosion and sea level rise causing the loss of beneficial natural areas and related habitat and seek to balance such strategies with the use of traditional "hard" structural-only stabilization.

Living Shorelines General Permit

Superstorm Sandy and other coastal hazards have impacted New Jersey's tidal wetlands which are experiencing chronic and episodic erosion. To address this issue, the State has, and is seeking to further encourage natural solutions through the establishment of living shorelines as an alternative to armoring the shoreline with hard structures such as bulkheads.

To facilitate the establishment of living shorelines, the NJDEP modified the general permit for habitat creation and enhancement to include the establishment of living shorelines and added a new general water area rule specific to living shorelines. These regulatory changes were adopted on an emergency basis and became effective upon acceptance for filing by the New Jersey Office of Administrative Law. Concurrently, the provisions of the emergency adoption were proposed for readoption pursuant to the rulemaking requirements of the Administrative Procedure Act, and became effective on June 17, 2013 upon acceptance for filing by the New Jersey Office of Administrative Law. These amendments were incorporated into the NJCMP on March 17, 2014.

Effective regulatory implementation is critically dependent upon early identification of issues and coordination between State and federal partners including NJDEP DLUR, Bureau of Shellfisheries, Bureau of Coastal Engineering, the USACE, the National Marine Fisheries Service, and any other affected programs to bring in the necessary expertise to fully evaluate the impacted resource. This

coordination will also be necessary to monitor living shoreline projects and adjust/develop methodologies to best address the conditions specific to New Jersey.

Regulatory amendments

As explained above, the NJDEP undertook emergency rulemaking to address, in part, the impacts to New Jersey's wetlands that occurred as a result of Superstorm Sandy. These regulatory changes were incorporated into the NJCMP on March 17, 2014.

On July 6, 2015, the NJDEP adopted a new permit-by-rule and general permit for the management of invasive plant species in coastal wetlands. Both the permit-by-rule and general permit require that the management activities do not adversely affect the habitat of threatened or endangered wildlife or plant species and require an aquatic use permit issued by the NJDEP's Bureau of Licensing and Pesticide Operations when the management activity is located within waters of the State or waters of the United States. The NJDEP also adopted amendments to the wetlands special area rule that change the requirements for the use of former dredged material disposal sites where wetlands have become established. The requirements serve to minimize impacts of the use of dredged material management areas on surrounding land uses and coastal resources. Further, regulatory amendments modified the coastal wetland mitigation requirements to achieve consistency between the NJDEPs freshwater wetland and coastal wetland mitigation requirements and to ensure that the State's coastal wetland mitigation requirements reflect current science. These regulatory amendments will be submitted to OCM as a program change.

## Coastal Hazards

As discussed previously, in response to Superstorm Sandy, New Jersey proposed to modify its Section 309 Assessment and Strategy to include a new Coastal Hazards Strategy. This modification was approved in December 2013. New Jersey proposed to develop and facilitate the implementation of effective best management practices and policies and provide the necessary tools, guidance, and technical assistance to coastal communities to foster resilient communities under the new Coastal Hazard Strategy.

Coastal Vulnerability Assessment and Mapping Protocol (CCVAMP)

With funding and support from the 2005-2010 309 Assessment and Strategy, New Jersey developed the CCVAMP to assist land use planners, hazard mitigation planners, emergency managers, and other local decision-makers in the identification of their community's vulnerability to coastal hazards. The CCVAMP defines the necessary steps to geospatially identify vulnerable land areas under present and future inundation scenarios, whether it be shallow coastal flooding due to spring tides, storm surge, or sea level rise. Through the development of inundation scenarios, coastal decision-makers can then determine threats to infrastructure, sensitive natural resources, and special needs populations.

The first step in the analysis is the development of a CVI, which stratifies high hazard areas in coastal communities by compiling available hazard, elevation, and landscape geospatial data into an analysis that considers environmental hazards. Armed with the understanding of areas naturally predisposed to risk, coastal decision-makers may guide future development away from high hazard areas and mitigate future losses.

The next step in the analysis is the Getting to Resilience questionnaire. Getting to Resilience (GTR) is a non-regulatory tool to assist local decision-makers in the collaborative identification of planning, mitigation, and adaptation opportunities to reduce vulnerability to coastal storms, flooding and sea level

rise. GTR is intended to start a dialogue among decision-makers, by encouraging creative, synergistic and collaborative thinking regarding plans and practices that increase community resiliency for current and future generations. GTR highlights the importance of local plan integration and consistency with municipal building codes, ordinances and zoning to seamlessly support flood protection efforts.

Since the development of the original GTR questionnaire by the NJCMP, the JC NERR has translated GTR into an interactive online tool (http://www.prepareyourcommunitynj.org/) that provides information on recommended strategies where improved community resilience is warranted. This online GTR tool goes beyond the original questionnaire and also provides information on where these recommendations overlap with other community planning tools (e.g., National Flood Insurance Program Community Ratings System).

The CCVAMP was piloted in four communities in 2010 and 2011. The pilot reports are available at http://www.state.nj.us/dep/cmp/czm_hazards.html. The CCVAMP is the basis for the NJCMP's ongoing resiliency planning efforts.

With the CCVAMP, CVI, and GTR developed, New Jersey was prepared to immediately begin providing these tools and services to coastal communities in the wake of Superstorm Sandy. The CCVAMP also serves as the basis for the development of municipal coastal vulnerability assessments resulting from the Municipal Public Access Planning and Coastal Vulnerability Assessment Grant Program (noted above in the Public Access section). These tools also provided the basis for a successful grant proposal to NOAA for the Resilient Coastal Communities Initiative.

New Jersey Resilient Coastal Communities Initiative (RCCI)

In the aftermath of Superstorm Sandy, most New Jersey communities were struggling to effectively manage immediate recovery and rebuilding efforts. These communities lacked the internal capacity to initiate the monumental effort of becoming more resilient in the face of increasing coastal hazards. In order to assist New Jersey communities become more resilient to coastal hazards, the NJCMP successfully proposed the RCCI in response to the FY 2013 Disaster Relief Appropriations Act for Coastal Resiliency Networks funding opportunity issued by NOAA.

The RCCI is a voluntary planning project that provides coastal communities with both planning and technical support in order to reduce exposure and vulnerability to hazards through long-range planning. The initiative supplements and leverages existing work being performed by project partners including Rutgers University Edward J. Bloustein School of Planning & Public Policy, JCNERR, Monmouth University Urban Coast Institute, Sustainable Jersey, and NJ Future. Over 70 of New Jersey's coastal communities have expressed a need and interest in these services.

# IV. Enhancement Area Assessments

The Section 309 Assessment and Strategy must include an assessment of each of the nine enhancement areas - wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans, ocean and Great Lakes resources, energy and government facility siting, and aquaculture – and strategies for addressing those highest priority areas.

The assessment must (1) determine the extent to which problems and opportunities for program enhancement exist within each of the enhancement area objectives; (2) determine the effectiveness of existing management efforts to address identified problems; and (3) identify high priority needs for program enhancement. The assessment provides the facts for the CMP and NOAA to determine what program improvements are needed. The assessment process is broken down into two phases to enable CMPs to more easily target their assessments to high priority enhancement areas for the program: Phase I (high-level) and Phase II (in-depth).

The strategy is a comprehensive, multi-year statement of goals to address high priority needs, identified in the assessment, for improving the CMP. In addition to stating clear goals, the strategy also lays out methods for achieving those goals that are designed to lead toward one or more program changes (as defined by 15 CFR 923.123a).

## Phase I (High-Level) Assessments

The Phase I (or high-level) assessments of the nine enhancement areas were completed by the NJCMP using the Phase I assessment templates provided by NOAA. The objectives of each enhancement area were reviewed and the NJCMP assessed and ranked each objective. Using responses to the Phase I assessment questions, key stakeholder input, and extensive knowledge of the issue, New Jersey ranked the enhancement areas as a high, medium, or low priority for the program.

If the enhancement area is ranked a medium or low priority, the CMP has completed its assessment of this issue. For enhancement areas ranked a high priority, the CMP continued their assessment by completing an in-depth Phase II assessment.

The Phase I Assessments for each of the nine enhancement areas follow.

# Aquaculture

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

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

**Resource Characterization:**

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

| Type of Facility/Activity | Status and Trends of Aquaculture Facilities and Activities | | |
|---|---|---|---|
| | # of Facilities | Approximate Economic Value | Change Since Last Assessment |
| Shellfish-Hatcheries | 1 Research (AIC); 5 Private | unknown | Decrease; one lost in Superstorm Sandy |
| Shellfish Farms | 82* (including hatcheries†) | unknown | Decrease |
| Hard Clams | 40 | unknown | Decrease |
| Oysters | 18 | unknown | Increase |
| HC & Oysters | 10 | unknown | Same |
| Surf Clams | 1 | unknown | Increase |
| Aquatic Plants | 1 | unknown | Decrease |
| Combined Finfish and Aquatic Plants | 2 | unknown | Increase; One expected to be added in April 2015 |
| Other[3] | 3 | unknown | Decrease; From 4 to 3 |
| Delaware Bay Shellfish Aquaculture Leases | 930 Leases; 140 Leaseholders; Acres 33,000 | unknown | |
| | | | |

[3] Other includes crab shedding, horseshoe crab research, and marine soft corals production.

| | | | |
|---|---|---|---|
| Atlantic Coast Shellfish Leases | 812 Leases; 179 Leaseholders; Acres 2,226 | | |

* Based upon a review of a 2011 Update of the Aquaculture Development Plan, there were only 76 shellfish mollusk farms, but the last 309 assessment states 116 (in 2010). The 2011 Plan update only has 96 total AFLs issued.

† The AFL database may cover hatchery operations as well as grow out farms within one license and therefore some of the hatcheries identified in the first row may also be included in the count for the second row. The new hatchery for 2015 and the research hatchery (Rutgers University) are NOT included in the count for the "in-water farms" so at most there could be 6 duplicates within the 82.

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

Shellfish aquaculture means the propagation, rearing, and subsequent harvesting of shellfish in controlled or selected environments, and the processing, packaging and marketing of the harvested shellfish. Shellfish aquaculture includes activities that intervene in the rearing process to increase production such as stocking, feeding, transplanting, and providing for protection from predators. Use of the term "aquaculture" in this document refers to shellfish aquaculture, unless specified otherwise.

There are currently 1,742 leases and 319 leaseholders covering 35,226 acres in New Jersey. Additionally, three Shellfish Aquaculture Development Zones (ADZs) were designated in 2012. The NJDEP's Bureau of Shellfisheries is the agency charged with administering the state's shellfish leasing programs on both the Atlantic Coast and Delaware Bay. New Jersey Statute Annotated Title 50, Chapter 1, Section 5 provides that the Commissioner of the NJDEP *"shall have full control and direction of the shellfish industry and resource and of the protection of shellfish throughout the entire State"*. The Bureau currently maintains two regional offices with fisheries biologists who are uniquely experienced and qualified to oversee the State's shellfish aquaculture leasing program.

There has been an increased interest in non-traditional aquaculture and some interest in shellfish lease expansion. As a food production process, shellfish aquaculture can be more profitable per acre than land-based agriculture. Shellfish aquaculture is encouraged in areas where it does not affect the coastal recreational economy, incur significant user group conflict, impede navigation or have impacts on or cause injury to threatened and endangered species. If sited appropriately, shellfish aquaculture can enhance the coastal ecosystem through the creation of habitat and through enhanced water filtration capacity.

Aquaculture is considered one the fastest growing food-producing sectors and in 2011, it accounted for nearly 50 percent of the worldwide production of aquatic food products. In 2014, there were 179 shellfish leaseholders who held 812 individual leases which occupied 2,226 acres in New Jersey's Atlantic coastal bays and rivers. Additionally, there were 930 shellfish leaseholders who held 140 individual leases occupying 33,000 acres in the Delaware Bay. The predominant species of shellfish produced are hard clams (*Mercenaria mercenaria*) and oysters (*Crassostrea virginica*). Shellfish aquaculture is vital to the economy in the coastal communities of New Jersey as it was worth $4.5 million dockside in 2007 (USDA 2008) for hard clams and oysters. New Jersey shellfish are shipped throughout the United States and sold locally at retail.

Of the 2,226 acres of bottom that are leased along the Atlantic Coast estuaries (excluding the Delaware Bay) less than an estimated 600 acres are actively used for hard clam aquaculture activities. Oyster aquaculture activities are dominant in the Delaware Bay. However, of the approximately 33,000 acres leased, less than an estimated 10% are actively used for traditional aquaculture activities

such as shell planting and seed transplanting. Approximately 15 years ago a few members of the commercial fishing community initiated a pilot scale oyster farm extending over approximately three acres in the vicinity of the Rutgers University Cape Shore Hatchery in Middle Township, Cape May County. These operations primarily utilize hatchery oyster 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. As referenced above, in 2012, following over a decade of examination, the NJDEP followed suit and created a rack and bag ADZ just south of the pilot scale farm. This area encompasses roughly 36 acres of intertidal areas and consists of 12 leaseholders controlling 1.5 to 3 acres each.

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 operations are combined oyster and clam facilities). The direct market harvest season has been in effect since 1996. The direct market season harvest program was developed in close cooperation with the industry and differs from the historical "bay season" harvest program. It allows oystermen to by-pass the transplant phase and instead harvest oysters 2½ inches or larger (market-sized) directly from the natural seed beds for direct sale. This program allows the industry to avoid the increased disease and predation mortalities typically experienced in the lower Delaware Bay. The direct market fishery has averaged approximately 70,000 – 85,000 bushels since 2000. As a result, most of the current harvest comes directly from the seed beds rather than aquaculture leases. The current harvest program is managed more as a fishery than an aquaculture activity. However, some entities in Delaware Bay continue to use their leased ground for shell planting and, while nominal, some harvest quotas are still transplanted to grounds for later harvest.

According to the Integrated Water Quality Monitoring and Assessment Report: Shellfish Harvest for Consumption, 58% of waters designated for "Shellfish Harvest for Consumption" fully support the use, a slight (2%) decrease from 2010 due to the 2011 reclassification of shellfish waters. For 2015, 42% of designated waters did not support this use; however, approximately 89% of shellfish waters are classified as harvestable. This is due to federal requirements for shellfish classification which provide three categories of harvestable shellfish: "approved" (with no restrictions), "seasonal harvest", and "special restrictions". All three of these categories are considered "harvestable" but under federal water quality assessment guidelines, only shellfish waters approved without restriction ("approved") may be assessed as fully supporting the use. Approved waters comprise 80% of classified shellfish waters. Total Maximum Daily Loads (TMDLs) have been developed for almost all (95%) of the waters assessed that do not support the harvesting of shellfish for consumption or use.

**Management Characterization:**

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

| **Management Category** | **Employed by State or Territory** (Y or N) | **CMP Provides Assistance to Locals that Employ** (Y or N) | **Significant Changes Since Last Assessment** (Y or N) |
|---|---|---|---|
| Aquaculture comprehensive siting plans or procedures | Y | N | Y |

| | | | |
|---|---|---|---|
| Other aquaculture statutes, regulations, policies, or case law interpreting these | Y | N | Y |

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

    a. Describe the significance of the changes;
    b. Specify if they were 309 or other CZM-driven changes; and
    c. Characterize the outcomes or likely future outcomes of the changes.

Aquaculture Comprehensive Siting Plans or Procedures

*Shellfish Hatcheries*

a.) The majority of hatcheries within the State have been operational for decades, are privately run, and focus on the production of hard clams in support of the Atlantic inland bay industry. In the spring of 2015,one private hatchery within the State initiated steps to begin producing oyster seed in addition to hard clam seed. This hatchery will support the newer and expanding oyster aquaculture industry along the Delaware Bay portion of the Cape May peninsula. Once fully operational, the facility will have complete production of seed from broodstock spawning to larval rearing, to seed growth and sales.

The Aquaculture Innovation Center (AIC) of Rutgers University, formerly known as the Multispecies Aquaculture Demonstration Facility, serves both a research role providing space for the housing and study of aquatic organisms as well as the role of public hatchery by producing and selling oyster seed to in-state farmers. Looking forward, the AIC proposes to diversify production with potential expansion of algal production for nutraceutical and bioenergy production, expand the research potential for other species of bivalve mollusk and crustaceans, as well as continue to provide oyster seed for New Jersey and mid-Atlantic farmers.

b.) These changes were not 309 driven.

c.) A hatchery has been a noted need for the Delaware Bay oyster growers over the past few years as the seed supply is limited by production capacity. Aquaculture farmers in New Jersey have been limited to buying seed from either the AIC or an out-of-state supplier. By having another in-state supplier, the industry can now avoid the import certification process and will have added source security should disease or other product issues arise. The additional hatchery is expected to greatly aid the growth of the oyster industry in both the Delaware Bay and Atlantic inland bays.

*Shellfish Aquaculture*

a.) The Delaware Bay region saw an increase in "non-traditional" structured-based shellfish aquaculture activities in 2012. The NJDEP Bureau of Shellfisheries views non-traditional shellfish aquaculture as more intensive and differentiates this work from traditional shellfish aquaculture due to the use of the water column. Traditional shellfish aquaculture is considered more extensive and focuses on hard clam screening, shell-planting, seed transplant and re-harvest. Non-traditional intensive aquaculture can include the use of equipment such as floating upwellers, shellfish rafts, and rack and bag systems. Many oyster aquaculturists operating in the

Delaware Bay region are currently utilizing the rack and bag method, as opposed to traditional oyster husbandry.

b.) These changes were not 309 driven.

c.) The NJDEP will continue to coordinate with other State agencies and aquaculturists to ensure the NJDEP's regulations, policies, and procedures recognize and facilitate the industry's developing methods while also protecting coastal resources.

Aquaculture Statutes, Regulations, Policies, or Case Law

*Shellfish Aquaculture Working Group*

a.) In 2014, the NJDEP Bureau of Shellfisheries formed the Shellfish Aquaculture Working Group (SAWG) to better coordinate state regulatory efforts related to shellfish aquaculture. Representatives from the USACE, Food and Drug Administration (FDA), New Jersey Department of Agriculture (NJDA), New Jersey Department of Health (NJDOH), and the NJDEP's Bureau of Shellfisheries, Bureau of Marine Water Monitoring, and DLUR, as well as other federal regulatory partners, joined to determine ways to better understand respective roles and how to better communicate with industry. The SAWG also spent time identifying appropriate areas where streamlining regulatory measures or processes would better serve the State's shellfish growers.

During the assessment period, the SAWG met on eleven occasions and hosted an invitation-only stakeholder meeting in June 2014. Stakeholders where asked to provide feedback on perceived current and historical barriers to the advancement of this industry. This information helped inform the regulatory process moving forward and opened a constructive and much-needed dialogue. Also, significant progress from the SAWG was made with a public workshop meeting between the SAWG agencies and stakeholders in October 2014. The goal of the workshop was to provide an overview of the regulatory scope of authority of each agency as well as to address pertinent questions the participants had regarding the agencies responsibilities and how they are currently regulated.

b.) These changes were not 309 driven.

c.) The SAWG brought together federal and state agency representatives that had previously been working in a more independent manner to regulate the same industry. Through concerted discussions, the regulatory aspects of shellfish aquaculture in New Jersey now have greater transparency and there is a more open dialog both between the agencies and States' shellfish growers. SAWG's long-term goal is to continue to further consolidate the permitting process and to update and revise State regulations and statutes to better reflect the needs of today's shellfish aquaculture industry.

*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 were initiated in the early 2000s and included the concept of ADZs as a mechanism to allow for use of structural aquaculture systems. The primary benefit of the ADZ was the consolidation of permits (one-stop-shop) and ease of access for growers. A secondary benefit was the aggregation of growers in one area in an effort to minimize user group and other potential resource conflicts.

Both the Delaware Bay and Atlantic Sections of the New Jersey Shellfisheries Councils coordinated with the NJDEP who took the lead with implementation of Delaware Bay ADZs. New rules are currently being developed by the NJDEP's Division of Fish and Wildlife that will govern ADZ leasing.

ADZs 2, 3, and 4 within Delaware Bay are now available for farming (ADZ 1 was removed due to user concerns), with the combined permits for these areas held at the NJDEP Bureau of Shellfisheries Delaware Bay Office. ADZ-4, an intertidal and near shore ADZ, is now fully leased with active oyster farming since 2012 and there is currently a waiting list for any parcels that are vacated. The sub tidal ADZ plots (2 and 3) have yet to see farm production, but interest in leasing these areas has been expressed since 2014.

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

c.) Allowing for production within ADZ-4 facilitated the expansion of the State's oyster aquaculture industry into Delaware Bay. Once oyster culture operations began in earnest within this ADZ, it was a stabilizing signal to other farmers in the area and the industry began expanding.

*Riparian Rights Assessed by the Tidelands Resource Council*

a.) The State claims ownership of tidelands, lands that are currently and formerly flowed by the mean high tide of a natural waterway, and holds them in trust for the people of the State. All tidelands are overseen by the Tidelands Resource Council (TRC), a board of twelve Governor-appointed volunteers, along with NJDEP's Bureau of Tidelands Management. As tidelands are public lands, an instrument in the form of a lease, license, or grant must be obtained for their occupation.

The TRC developed an aquaculture license policy to be implemented by the NJDEP's Bureau of Tidelands Management. Under the current policy, aquaculture licenses are set for a 3-year term with an annual fee set at $0.01 per square foot of shellfish structures, with a $100.00 minimum fee.

b.) These changes were not 309 driven.

c.) Aquaculture activities are unique in that they occupy large areas of submerged lands and as a result could potentially impede public use. The NJDEP's Bureau of Tidelands Management will continue to monitor the effectiveness of the license policy and update it accordingly. Additionally, through the use of GIS, the NJDEP's Bureau of Tidelands Management and the Bureau of Shellfisheries are coordinating with each other on determining the location of existing tidelands instruments and existing/proposed shellfish leases. By doing so, the two Bureaus can easily identify areas where there is overlap which could lead to potential user and ownership conflict. Currently, this effort will be on a case-by-case basis, however, the goal is to expand this effort State-wide.

*Extension Coordinator for Aquaculture in Delaware Bay & Growers Forum*

a.) Around the time ADZ-4 began leasing, several additional independent farmers began operations in areas to the north. Due to the increased presence and interest in oyster aquaculture within Delaware Bay, the New Jersey Sea Grant Consortium-Rutgers Cooperative Extension (Rutgers Cooperative Extension) decided to dedicate one of its marine agents as an Aquaculture Program Coordinator for the Delaware Bay area. This staff member in turn formed the Growers Forum, a formal means of gathering shellfish growers within the state (although mainly focused on those

within Delaware Bay) to address the needs and concerns of the growers. Through this forum and the efforts of the Aquaculture Coordinator, a Cape May Oyster Cooperative was formed to foster the exchange of ideas and services among the growers in the area.

b.) These changes were not 309 driven.

c.) Efforts by the Rutgers Cooperative Extension, working with segments of the aquaculture industry within Delaware Bay, have assisted in slow but steady growth. The Rutgers Cooperative Extension has undertaken several successful research projects related to the farmer's production methods and marketing as well as coordinated an economic study of New Jersey shellfish aquaculture statewide with the Atlantic inland bays extension. There is also a new hard clam growers' cooperative formed that is expanding into Community Supported Fisheries.

*Aquaculture Development Plan*

a.) In October 2011, the New Jersey Aquaculture Advisory Council (AAC) published an update to the Aquaculture Development Plan, titled "Opportunities & Potential for Aquaculture in New Jersey". This document highlighted many of the successes already captured in the previous Section 309 Assessment and Strategy and identified areas where the state needed to overcome obstacles to the growth of the aquaculture industry. The recommendations, divided into those likely to require additional state financial investment and those which should not, provide a pathway for industry stability and growth. Additionally, since the AAC is an independent expert panel, the recommendations do not favor any one agency or person, and are therefore beneficial to the entire aquaculture industry (shellfish, finfish, and plants) throughout the state.

b.) These changes were not 309 driven.

c.) The AAC will continue their efforts to support the expansion of the aquaculture industry in New Jersey. Plans are being developed to update the Aquaculture Development Plan to reflect the most recent State regulatory changes and use designations.

*Red Knot Research Proposal (Permit Conditions for Nationwide Permit 48 (NWP--48)*

a.) The U.S. Fish and Wildlife Service (USFWS) recently designated the Red Knot (*Calidris canutus rufa*) as threatened under the Endangered Species Act (ESA) which allows Federal and State agencies to implement strong protection measures to ensure the persistence of the subspecies. Pursuant to Section 7 of the ESA, the USFWS has proposed conservation measures to avoid adverse effects to Red Knots from shellfish aquaculture activities on the New Jersey side of the Delaware Bay. Such actions, like the seasonal closure of all shorelines where Red Knots forage on horseshoe crab eggs, could severely impact the profitability, and ultimately the viability, of commercial oyster production. While both the USFWS and the oyster aquaculture industry are open to compromise, disturbance studies conducted to date have not quantified the impact of oyster aquaculture activities on Red Knot foraging rates.

b.) These significant changes were not 309 driven.

c.) In an effort to resolve this situation, the NJDEP Bureau of Shellfisheries and Endangered and Nongame Species Program are funding a research study that began in 2015. The study is designed to research the effects of oyster aquaculture on foraging shorebirds on the Delaware Bay. The information obtained from this study will inform the development of appropriate and effective protective measures for Red Knots. The team of academics and extension agents, representing both conservation and aquaculture interests, will facilitate the exchange of information with the

oyster aquaculture industry and the modifications to current practices that will ensure the persistence and growth of a key industry.

*Regulatory Amendments*

a.) Coastal Permit Program Rules and Coastal Zone Management Rules

Information compiled by the New Jersey Department of Agriculture indicated that New Jersey's hard clam and oyster aquaculture industry suffered nearly $1,347,500 in damages to property, buildings, gear, structures and product as a result of Superstorm Sandy. Specifically, it is estimated that the hard clam aquaculture industry, which is the largest aquaculture sector and valued at $3.5 million, suffered approximately $1,118,000 in property damage, with an estimated $130,000 in lost hard clams. New Jersey's second largest aquaculture sector, oysters, incurred approximately $33,000 in property damage and $66,500 in oyster loss. According to the 2012 Hurricane Sandy Fishery Disaster Declaration the total shellfish industry losses amounted to $3,632,264. Information is still being collected regarding individual losses.

On June 17, 2013 the NJDEP adopted regulatory amendments to its coastal rules that facilitate the expeditious rebuilding of more resilient coastal communities and coastal-related tourism industries, and help facilitate the recovery of the coastal ecosystem. Among other things, these amendments were intended to encourage and support recovery of New Jersey's shellfish aquaculture industry in response to Superstorm Sandy.

To facilitate the restoration of this industry and to encourage shellfish aquaculture activities, the NJDEP amended the Coastal Permit Program Rules to streamline the permitting process through the addition of three new permits-by-rule: placement of land based upwellers and raceways; placement of predator screens and oyster spat attraction devices; and, placement of shellfish cages within a shellfish lease area. The regulatory amendments also added two new general permits for commercial aquaculture activities and the placement of shell within shellfish lease areas. In addition, the regulatory amendments modified the Coastal Zone Management rules' aquaculture general water area rule to specifically address shellfish aquaculture.

*Atlantic Coast and the Delaware Bay Shellfisheries Council's Leasing Committees*

a.) The Atlantic Coast and the Delaware Bay Shellfisheries Council's respective Leasing Committees (LC) were reconvened in 2014. The LCs were first formed in the late 2000s to review the AAC's Leasing Subcommittee Draft Report that was forwarded to both councils for review and approval in 2008. The AAC committee met over a number of years and made a number of recommendations that addressed significant changes to the shellfish leasing policy for shellfish aquaculture in New Jersey. It is important to note that the AAC's first leasing report was originally delivered to the full AAC in May 2003. After a lengthy period of inaction on the report's recommendations, the AAC leasing committee was asked to be reconvened (January 2008) to discuss additional potential changes to leasing policy for shellfish leases and more specifically with the refinement of policies for Aquaculture Development Zones (ADZs –for structural shellfish aquaculture in the Delaware Bay). The Delaware Bay ADZ was subsequently opened in 2012 and leases were issued based largely on the recommendations of the AAC's LC.

The LCs are comprised of a Chairman and one additional member of the Atlantic Coast Section as well as general members of the shellfish aquaculture industry, Rutgers Cooperative Extension, the Bureau of Shellfisheries and the Department of Agriculture. The Shellfisheries Council (both Delaware Bay and Atlantic Coast sections) are industry-member groups that have the authority to initiate leasing programs. NJDEP develops and implements policies that govern shellfish leases, in coordination with the NJDA.

b.) These significant changes were not 309 driven.

c.) The goal of the LCs is aimed at revisiting a number of the outstanding issues discussed during the AAC leasing committee and the Council's subsequent leasing committee meetings, and where appropriate, to refine and further develop those leasing policy recommendations. The primary goal is to identify and implement new policies and to revise existing policies and rules that are both consistent with shellfish aquaculture industry growth and NJDEP goals for protecting natural resources. In coordination with the Council, the NJDEP's Bureau of Shellfisheries also intends to develop a streamlined and predictable shellfish leasing program that will assist the Council in its ability to make informed recommendations for lease expansion and lease utilization.

**Enhancement Area Prioritization:**

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

| | |
|---|---|
| High | __X__ |
| Medium | _____ |
| Low | _____ |

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

   As discussed herein, New Jersey's aquaculture industry is rapidly evolving from traditional to more non-traditional methods. As a result, the NJCMP recognizes that regulations will also need to continue to evolve in an effort to reflect industry changes. The primary goal will be to facilitate industry expansion in conjunction with coastal resource protection. In addition to regulatory changes, new and updated spatial data and research are needed.

# Coastal Hazards

**Section 309 Enhancement Objective:** Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

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

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

**Resource Characterization:**

1. **Flooding:** Using data from *NOAA's State of the Coast* "Population in the Floodplain" viewer[4] and summarized by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,[5] indicate how many people were located within the state's coastal floodplain as of 2010 and how that has changed since 2000. You may to use other information or graphs or other visuals to help illustrate.

| Population in the Coastal Floodplain | | | |
|---|---|---|---|
| | **2000** | **2010** | **Percent Change from 2000-2010** |
| No. of people in coastal floodplain[6] | 780,846 | 886,972 | 13.6 % |
| No. of people in coastal counties[7] | 8,311,913 | 8,683,202 | 4.5% |
| Percentage of people in coastal counties in coastal floodplain | 9.4% | 10.2% | ---------- |

2. **Shoreline Erosion** (for all states other than Great Lakes and islands; for Great Lakes and islands, see Question 5): Using data from *NOAA's State of the Coast* "Coastal Vulnerability Index,"[8] indicate the vulnerability of the state's shoreline to erosion. You may use other information or graphs or other visuals to help illustrate or replace the table entirely if better data is available.

[4] http://stateofthecoast.noaa.gov/pop100yr/welcome.html. Note FEMA is in the process of updating the floodplain data. This viewer reflects floodplains as of 2010. If you know the floodplain for your state has been revised since 2010, you can either use data for your new boundary, if available, or include a short narrative acknowledging the floodplain has changed and generally characterizing how it has changed.
[5] www.csc.noaa.gov/digitalcoast/tools/snapshots
[6] http://stateofthecoast.noaa.gov/pop100yr/welcome.html
[7] http://coast.noaa.gov/quickreport/#/index.html (Counties included: Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Salem, Somerset, Sussex and Union.
[8] http://stateofthecoast.noaa.gov/vulnerability/welcome.html (see specifically "Erosion Rate" drop-down on map). The State of the Coast visually displays the data from USGS's Coastal Vulnerability Index.

| Vulnerability to Shoreline Erosion | | |
|---|---|---|
| **Vulnerability Ranking** | **Miles of Shoreline Vulnerable**[11] | **Percent of Coastline**[9] |
| Very low (>2.0m/yr.) accretion | 65.2 | 9% |
| Low (1.0-2.0 m/yr.) accretion) | 21.1 | 3% |
| Moderate (-1.0 to 1.0 m/yr.) stable | 124.4 | 18% |
| High (-1.1 to -2.0 m/yr.) erosion | 172.7 | 25% |
| Very high (<-2.0 m/yr.) erosion | 281.1 | 42% |

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

| Coastal Vulnerability to Historic Sea Level Rise | | |
|---|---|---|
| **Vulnerability Ranking** | **Miles of Shoreline Vulnerable**[11] | **Percent of Coastline** |
| Very low | 0 | 0% |
| Low | 8.9 | 2% |
| Moderate | 253 | 38% |
| High | 169.2 | 25% |
| Very high | 233.4 | 35% |

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

| Type of Hazard | General Level of Risk[11] (H, M, L) |
|---|---|
| Flooding (riverine, stormwater) | H |
| Coastal storms (including storm surge)[12] | H |
| Geological hazards (e.g., tsunamis, earthquakes) | L |
| Shoreline erosion[13] | H |

[9] To obtain exact shoreline miles and percent of coastline, mouse over the colored bar for each level of risk or download the Excel data file.
[10] http://stateofthecoast.noaa.gov/vulnerability/welcome.html (see "Vulnerability Index Rating" drop-down on map). The State of the Coast visually displays the data from USGS's Coastal Vulnerability Index.
[11] Risk is defined as "the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage." *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*
[12] In addition to any state- or territory-specific information that may help respond to this question, the U.S. Global Change Research Program has an interactive website that provides key findings from the 2014 National Climate Assessment for each region of the country, including regions for the coasts and oceans, and various sectors. The report includes findings related to coastal storms and sea level rise that may be helpful in determining the general level of risk. See http://nca2014.globalchange.gov/.

| Type of Hazard | General Level of Risk[11] (H, M, L) |
|---|---|
| Sea level rise[13,14,15] | H |
| Great Lake level change[14] | n/a |
| Land subsidence | M (varies by location) |
| Saltwater intrusion | M (varies by location) |
| Other (please specify) | |

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

   Following is a selection of recent reports related to identified coastal hazards that are illustrative of the increasing risk to New Jersey's coastal area.

   State of New Jersey 2014 Hazard Mitigation Plan
   http://www.ready.nj.gov/programs/mitigation_plan2014.html
   The *State of New Jersey 2014 Hazard Mitigation Plan* (HMP) includes an overview of the location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events. The HMP identifies a comprehensive list of natural and man-made hazards applicable to the State and evaluates them to identify the overall hazards of concern for the State of New Jersey. Coastal erosion and sea level rise, earthquakes, floods (riverine, coastal, storm surge, tsunami, and stormwater), geological hazards (landslide and subsidence/sinkholes), hurricanes and tropical storms, nor'easters, and severe weather (high winds, tornadoes, etc.) were included in the list of Hazards of Concerns. According to the HMP Executive Summary those hazards that pose greatest risk to the State include coastal hazards such as flooding (riverine and coastal), hurricanes and tropical storms and accompanying wind and storm surge, and earthquakes.

   Nuisance Flooding
   Recently released reports from NOAA indicate that nuisance flooding - defined by NOAA's National Weather Service as between one to two feet above local high tide – will occur more and more frequently. So-called "nuisance flooding" -- which causes public inconveniences such as frequent road closures, overwhelmed storm drains, and compromised infrastructure -- has increased on all three U.S. coasts, between 300 and 925 percent since the 1960s, according to the NOAA technical report (Sea Level Rise and Nuisance Flood Frequency Changes around the United States). The report indicates an average 0.43 nuisance flood days (1957-1963) and 3.1 (2007-2013) at Atlantic City, an increase of 682%. At Sandy Hook, the report indicates an average 0.45 nuisance flood days (1957-1963) and 3.3 (2007-2013), an increase of 626%.

   Sea Level Rise
   Recent data and studies have shown that sea level rise is occurring in New Jersey at a faster rate than is occurring globally. Tide gauges off New Jersey's coast show sea level rising at 3-4 mm/yr. since 1900. The New Jersey coastal plain is also subsiding due to sediment compaction and groundwater

[13] See NOAA State of the Coastal Vulnerability to Sea Level Rise Tool (select "Erosion Rate" from drop-down box) http://stateofthecoast.noaa.gov/vulnerability/welcome.html. The State of the Coast visually displays the data from USGS's Coastal Vulnerability Index.

withdrawal, accounting for about another 1 mm/yr. A recent report on sea level rise in NJ[14] predicts sea level rise of 7 to 16 inches by 2030; 13 to 28 inches by 2050; and, 30 to 71 inches by 2100.
While this Assessment was being drafted, a study by researchers at Rutgers and Harvard Universities (http://www.nature.com/nature/journal/vaop/ncurrent/full/nature14093.html) was issued indicating that the rate of sea level rise (SLR) has increased in the past 20 years. This new information may affect some SLR projections.

New Jersey Climate Adaptation Alliance
Resilience: Preparing New Jersey for Climate Change
http://njadapt.rutgers.edu/docman-lister/resource-pdfs/73-njcaa-gap-analysis-final-pdf/file
This report is a step toward developing policy recommendations to enhance climate change preparedness in New Jersey. It summarizes key gaps identified to date through a stakeholder outreach process. It provides context regarding New Jersey's changing climate and vulnerabilities. Next examined is the science of climate change – specifically, what New Jersey in the 21st century can expect in regard to precipitation, temperature, sea level rise, and extreme weather. The report then provides an assessment of public opinion in New Jersey about climate change and the willingness of residents to fund adaptation policy. Following the assessment, the report provides an analysis of population vulnerability to climate change impacts. The report concludes with the findings of a seven-month stakeholder outreach process that was designed to gather the views of lay people and professionals in a wide range of specialized fields . Outreach was also conducted for issues that permeate multiple sectors: emergency management and vulnerable populations.

Increasing Precipitation Events
Recent studies project an increase in the intensity and frequency of precipitation events that lead to more flooding and an increased potential of landslides. The *Climate Change in New Jersey: Trends and Projections* report by the NJ Climate Adaptation Alliance (http://www.precaution.org/lib/njcaa-trends-and-projections.pdf) cites an increase in the amount of total precipitation falling during 1% (100-year) storm of 54%, and projected increases of up to 3 to 4 inches over current rain events. The 1% storm is also projected to occur more frequently, happening every 35 to 55 years by 2050 and every 15 to 35 years by 2100.

Increasing Floodplains
While not specific to New Jersey, the *Impact of Climate Change and Population Growth on the National Flood Insurance Program through 2100* report produced for the Federal Emergency Management Agency (FEMA) in 2013 projects the riverine floodplain associated with the 1% storm to grow by 45% nationally by 2100. Further, the typical coastal Special Flood Hazard Area is projected to increase by 55%, and likely more for the Atlantic coast. (See http://www.aecom.com/News/Sustainability/FEMA+Climate+Change+Report)

Repetitive Loss
According to the National Flood Insurance Program's Claim Information by State report (http://bsa.nfipstat.fema.gov/reports/1040.htm) of November 30, 2014, New Jersey recently passed Texas as the second highest ranked state in FEMA total loss payments with $5,622,667,976.21 in losses. New Jersey is the fourth highest ranked state in the total number of losses at over 188,000. While these losses are not limited to New Jersey's coastal zone, the statistics are indicative of the increasing risks to natural hazards.

[14] Miller, K. G., R. E. Kopp, B. P. Horton, J. V. Browning, and A. C. Kemp, 2013: A geological perspective on sea-level rise and impacts along the U.S. mid-Atlantic coast - http://geology.rutgers.edu/images/stories/faculty/miller_kenneth_g/kgmpdf/13-Miller.EarthsFuture.pdf

Landslides

Landslides are a significant issue in New Jersey, particularly in the coastal bluffs of Atlantic Highlands in Monmouth County and, to a lesser degree, along the Navesink estuary and Raritan Bay in the Keyport-South Amboy area. The hazard is more from heavy rainfall than from wave erosion (although there is some from wave erosion). There are also some small landslide-prone coastal bluffs along the Delaware estuary in Burlington and Mercer counties. An updated inventory and GIS mapping of landslides in New Jersey can be found at http://www.njgeology.org/geodata/dgs06-3.htm.

Saltwater Intrusion

The confined aquifers of the New Jersey Coastal Plain are a major source of water supply for New Jersey, providing the majority of water to the southern region of the State. Steadily increasing use of these aquifers has caused progressive declines in water levels in some areas and saltwater intrusion in other areas. The presence of and potential for saltwater intrusion represents a significant limitation on water-supply development in the confined aquifers. Active intrusion has been documented in the Raritan Bay area, the Cape May Peninsula, and the Delaware Bay area, all in New Jersey's Atlantic Coastal Plain province. The Winter-Spring 2014 volume of *Unearthing New Jersey* – a newsletter published by the NJ Geological and Water Survey – includes an article titled, Mapping, Monitoring and Managing Cape May County's Groundwater Resource that summarizes the current state of the issue in Cape May County. (http://www.state.nj.us/dep/njgs/enviroed/newsletter/v10n1.pdf)

**Management Characterization:**

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

| **Management Category** | **Employed by State or Territory** (Y or N) | **CMP Provides Assistance to Locals that Employ** (Y or N) | **Significant Changes Since Last Assessment** (Y or N) |
|---|---|---|---|
| **Statutes, regulations, policies, or case law interpreting these that address:** | | | |
| *elimination of development/ redevelopment in high-hazard areas*[15] | Y | N | Y |
| *management of development/ redevelopment in other hazard areas* | Y | N | Y |
| *climate change impacts, including sea level rise or Great Lake level change* | N | N | Y |
| **Hazards planning programs or initiatives that address:** | | | |
| *hazard mitigation* | Y | Y | Y |
| *climate change impacts, including sea level rise or Great Lake level change* | Y | Y | Y |
| **Hazards mapping or modeling programs or initiatives for:** | | | |
| *sea level rise or Great Lake level change* | Y | Y | Y |
| *other hazards* | Y | Y | Y |

[15] Use state's definition of high-hazard areas.

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

   Under the CZM rules, coastal high hazard areas are considered a special area because these areas are so hazardous that they merit focused attention and special management rules. As defined in the CZM rules at N.J.A.C. 7:7-9.18, coastal high hazard areas are flood prone areas subject to high velocity waters (V zones) as delineated on the Flood Insurance Rate Maps (FIRM) prepared by FEMA, and areas within 25 feet of oceanfront shore protection structures, which are subject to wave run-up and overtopping. The coastal high hazard area extends from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The inland limit of the V zone is defined as the V zone boundary line as designated on the FIRM or the inland limit of the primary frontal dune, whichever is most landward.

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

   <u>Statutes, regulations, policies, or case law</u>

   a.) Regulatory Changes

   1. Flood Hazard Area Control Act Rules, N.J.A.C. 7:13 (Emergency Rule and readoption)
      On January 24, 2013 the NJDEP adopted, amendments to the Flood Hazard Area Control Act rules at N.J.A.C. 7:13. These regulations were adopted on an emergency basis and became effective upon acceptance for filing by the New Jersey Office of Administrative Law. Concurrently, the provisions of the emergency adoption were proposed for readoption pursuant to the rulemaking requirements of the Administrative Procedure Act, and became effective on March 25, 2013 upon acceptance for filing by the New Jersey Office of Administrative Law.

      The regulatory amendments relate to the construction and reconstruction of buildings in flood hazard areas based on the most recent and reliable flood elevation data. The amendments enable the use of the best available flood elevation data to determine the flood hazard area design flood elevation for a given site, including FEMA's recently released advisory flood maps for New Jersey's coast. The amendments also incorporate FEMA mapping issued as final (effective) that is developed in partnership with the NJDEP such that it depicts the NJDEP's flood hazard area design flood elevation and floodway limit; allow flood proofing measures to be used instead of elevating structures in certain, limited situations; and ensure consistency between the NJDEP's standards for elevating buildings in flood hazard areas with the building standards of the Uniform Construction Code promulgated by the Department of Community Affairs at N.J.A.C. 5:23.

   2. Coastal rules (Coastal Permit Program Rules, N.J.A.C. 7:7 and Coastal Zone Management Rules, N.J.A.C. 7:7E (Emergency Rule and readoption))
      In response to Superstorm Sandy, the NJDEP adopted regulatory changes on an emergency basis and became effective upon acceptance for filing by the New Jersey Office of Administrative Law. Concurrently, the provisions of the emergency adoption were proposed

for readoption pursuant to the rulemaking requirements of the Administrative Procedure Act, and became effective on June 17, 2013 upon acceptance for filing by the New Jersey Office of Administrative Law. These amendments were incorporated into New Jersey's federally approved CMP on March 17, 2014.

The adopted regulatory amendments to the coastal rules were intended to facilitate the expeditious rebuilding of more resilient coastal communities and coastal-related industries, and help facilitate the recovery of the coastal ecosystem in the aftermath of Superstorm Sandy. See subsection c) below.

3. Amendments to stormwater infrastructure rules, programs, and initiatives are discussed in the Marine Debris Assessment.

4. Amendments to waste management rules, programs, and initiatives are discussed in the Marine Debris Assessment.

b.) These changes were not 309 driven.

c.) The NJDEP determined that changes to the Flood Hazard Area Control Act Rules and coastal rules were necessary in view of the significant adverse social, economic, and environmental impacts resulting from Superstorm Sandy and in support of the rebuilding and economic recovery of New Jersey's coastal areas in an expeditious and resilient manner. The changes to the coastal rules are intended to facilitate the expeditious rebuilding of more resilient coastal communities and coastal-related industries, and help facilitate the recovery of the coastal ecosystem. The regulatory amendments fall into five broad categories: (1) facilitation of the expeditious rebuilding of residential and commercial developments; (2) facilitation of renovation or reconstruction of existing marinas and construction of new marinas; (3) restoration of New Jersey's shellfish aquaculture industry; (4) maintenance of engineered beaches and dunes and establishment of living shorelines; and (5) facilitation of removal of sand and other materials, as well as the availability of dredged material disposal/placement areas. In addition to facilitating the resilient recovery and rebuilding of New Jersey's coastal communities, the changes enable the NJDEP to implement the coastal management program in an effective, efficient, and environmentally protective manner. The NJCMP, through the coastal rules, will continue to steer development away from naturally hazardous and sensitive areas, protect estuarine and marine environments from adverse impacts, and promote resource conservation and designs sensitive to the environment.

<u>Hazards Mapping and Planning Programs and Initiatives</u>

*Coastal Vulnerability Assessment and Mapping Protocol (CCVAMP)*
The CCVAMP was developed by the NJCMP to assist land use planners, hazard mitigation planners, emergency managers, and other local decision-makers in the identification of their community's vulnerability to coastal hazards. The CCVAMP defines the necessary steps to geospatially identify vulnerable land areas under present and future inundation scenarios, whether it be shallow coastal flooding due to spring tides, storm surge, or sea level rise. Through the development of inundation scenarios, coastal decision-makers can then determine threats to built infrastructure, sensitive natural resources, and special needs populations. The first step in the analysis is the development of a CVI, which stratifies high hazard areas in coastal communities by compiling available hazard, elevation, and landscape geospatial data into an analysis that considers environmental hazards. Armed with the

understanding of areas naturally predisposed to risk, coastal decision-makers may guide future development away from high hazard areas and mitigate future losses. The CCVAMP was piloted in four communities in 2010 and 2011. The CCVAMP is the basis on the Coastal Management Program's ongoing resiliency planning efforts, addressed below. The CCVAMP Report and pilot reports are available at http://www.state.nj.us/dep/cmp/czm_hazards.html.

*Coastal Vulnerability Index* (CVI)
The NJCMP developed a CVI that identifies a range of hazard-prone areas, including those susceptible to coastal flooding and impacts to the underlying land. Specifically, the CVI is a composite model of geospatial vulnerability indicators including storm surge inundation, mean high high-water surfaces, flood prone areas, sea level rise, geomorphology, slope, erosion, and drainage data. Together, these indicators classify a range of hazard prone areas susceptible to both chronic and episodic hazards. The NJCMP uses the CVI to identify relative vulnerability to coastal hazards in 3 classifications - Low, Medium, and High Vulnerability – over 4 time periods – present day, 2030, 2050, and 2100. In its current form, the CVI identifies approximately 555,901 acres as High Vulnerability by 2050. While only a planning tool, these CVI results indicate the extent of highly vulnerable area of the State. More information on CVI development can be found at: ww.nj.gov/dep/gis/MappingContests/mapcon2014/maps/DI16.jpg. The document at this link was awarded First Place for Best Data Integration at the 2014 ESRI User Conference.

As part of the New Jersey Resilient Coastal Communities Initiative, described below, a CVI-based map was provided to 239 communities in New Jersey's coastal zone. This map illustrated the CVI based on 2050 sea level rise, and included a set of critical community facilities such as hospitals, police stations, and fire stations.

*Getting to Resilience (GTR)*
GTR is a non-regulatory tool to assist local decision-makers in the collaborative identification of planning, mitigation, and adaptation opportunities to reduce vulnerability to coastal storms, flooding and sea level rise. GTR was envisioned to work in conjunction with the mapped information provided through the CVI and CCVAMP. GTR is intended to start a dialogue among decision-makers, by encouraging creative, synergistic and collaborative thinking regarding plans and practices that increase community resiliency for current and future generations. GTR highlights the importance of local plan integration and consistency with municipal building codes, ordinances and zoning to seamlessly support flood protection efforts.

Since the development of the original GTR questionnaire by the NJCMP, the JCNERR has translated the GTR tool into an interactive online tool (http://www.prepareyourcommunitynj.org/) that provides information on recommended strategies where improved community resilience is warranted. This online GTR tool goes beyond the original questionnaire and also provides information on where these recommendations overlap with other community planning tools (e.g., National Flood Insurance Program Community Ratings System).

*New Jersey Resilient Coastal Communities Initiative (RCCI)*
In the aftermath of Superstorm Sandy, most New Jersey communities were struggling to effectively manage immediate recovery and rebuilding efforts. These communities lacked the internal capacity to initiate the monumental effort of becoming more resilient in the face of increasing coastal hazards. In order to assist New Jersey communities become more resilient to coastal hazards, the NJCMP successfully proposed the RCCI in response to the FY 2013 Disaster Relief Appropriations Act for Coastal Resiliency Networks funding opportunity issued by NOAA. The RCCI will provide

resiliency assessment, planning and technical assistance to 239 coastal communities to make informed decisions on mitigation and adaptation measures.

The RCCI is a voluntary planning project that provides coastal communities with both planning and technical support in order to reduce exposure and vulnerability to hazards through long-range planning. The initiative supplements and leverages existing work being performed by project partners including Rutgers University Edward J. Bloustein School of Planning & Public Policy, JCNERR, UCI, Sustainable Jersey, and NJ Future.

The primary objectives of the RCCI are to:

1. Assist municipalities develop a CVA identifying vulnerabilities to coastal hazards based on existing tools developed by the NJCMP, including the CVI mapping addressed above.
2. Identify municipal land use planning actions, tools, and best management practices for communities to consider in their planning efforts – with particular consideration of New Jersey's existing regulatory requirements.
3. Provide direct planning and technical support to coastal communities to assist them in their resiliency planning efforts. (see below)
4. Identify the potential policy and rule changes necessary to develop a Resilient Coastal Communities program as an enforceable action.

a.) The NJCMP considers development of the CCVAMP and implementation of the RCCI as vitally important to the State's success in providing coastal communities with the information and planning support to make informed decisions that result in more resilient communities.

b.) This was a 309 driven change, although the RCCI funding is primarily received from the NOAA CRest grant.

c.) The implementation of the RCCI is under way. As of December 2014, 75 municipalities in 13 counties had requested planning and technical assistance through the RCCI.

*Flood Hazard Risk Reduction Measures Grant Program*

The Flood Hazard Risk Reduction Measures Grant Program is aimed at protecting some of the more vulnerable communities in the nine counties most impacted by Superstorm Sandy – Atlantic, Bergen, Cape May, Essex, Hudson, Middlesex, Monmouth, Ocean and Union – through enhanced resiliency and reduced flood risk measures. Some examples of eligible projects include; enhancing stormwater infrastructure; beneficial use of dredged materials; initiatives that address flood risks posed by coastal lakes and inland waterways; and incorporating both man-made flood barriers and nature-based solutions, such as restoration of wetlands and creation of living shorelines, where appropriate. The $15 million dollar grant program was established through the U.S. Department of Housing and Urban Development's Community Development Block Grant (CDBG) program.

a.) This was not a 309 driven change.

b.) While the development of the Flood Hazard Risk Reduction Measures Grant Program was not a 309-driven change, the program dovetails with the RCCI. It is anticipated that the Flood Hazard Risk Reduction Measures Grant Program will be a tool that the RCCI can use to achieve the goal of enhanced resiliency and coastal hazard mitigation in New Jersey's coastal zone.

*Hazard Mitigation Grant Program (HMGP) residential flood-elevation program*

a) The NJDEP has assumed administration of the HMGP from the New Jersey Department of Community Affairs as the sub-grantee. The HMGP Elevation Program is a FEMA-funded reimbursement program designed to assist homeowners in affected communities with the elevation of primary single-family homes to reduce the risk of loss of life and property from a future storm. The program is limited to the nine Superstorm Sandy-impacted counties of Atlantic, Bergen, Cape May, Essex, Hudson, Middlesex, Monmouth, Ocean and Union.

Eligible applicants can receive reimbursement of up to $30,000 for elevations of existing homes. New Jersey has committed $100 million in HMGP funds to potentially elevate approximately 2,700 primary residential structures. To date, the NJDEP has submitted more than 1,400 applications to FEMA and expects more approvals in the near future. More than half of the homeowners who have applied for elevation grants are in Ocean and Monmouth counties. For more information on the HMGP, visit: http://www.nj.gov/dep/special/hurricane-sandy/hmgp.

b) This was not a 309 driven change.

c) NJDEP Commissioner Bob Martin said, "This Administration is committed to a comprehensive recovery strategy that will make New Jersey stronger and more resilient to future storms. These elevation grants are an important component of this effort. We are continuing to work hard to get future grants processed as quickly as possible." It is clear, that while this was not a 309 driven change, the NJDEP and the State are fully committed to the longevity of the HMGP Elevation Program. Again, as with the Flood Hazard Risk Reduction Measures Grant Program and the NJ Resiliency Network the HMGP is another tool to enhance the implementation of RCCI.

*Blue Acres Program*

a.) The $300 million buyout program will purchase some 1,000 damaged homes from willing sellers at pre-Sandy market values. The Blue Acres Program is administered by the NJDEP and is funded primarily through FEMA's Hazard Mitigation Grant Program. Additional federal funding to acquire other properties impacted by Superstorm Sandy will be provided through the a second round of federal CDBG Disaster Recovery funds allocated to New Jersey by the U.S. Department of Housing and Urban Development (HUD).

Case managers are paired with individual homeowners to help guide them through the process. Under the Blue Acres Program, structures are demolished and the properties converted to open space that provides natural protections for communities against future severe weather events. As of April 15, 2015, 719 properties in 10 municipalities have been approved for buyouts, with 449 homeowners accepting offers. The program has closed on 287 homes, of which 197 have been demolished. The Blue Acres Program has made offers in nine municipalities.

The original Blue Acres Program, which began in 1995, targeted the purchases of land in floodways in the Delaware, Passaic and Raritan river basins, and was later expanded to include all state waters. Eligible properties are those that have been storm damaged, that are prone to incurring storm damage, or that may buffer or protect other lands from such damage.

b.) This was not 309 driven.

c.) NJDEP Commissioner Bob Martin has called the Blue Acres Program a tremendous success and has identified it as an important part of the Christie Administration's efforts to make New Jersey more resilient in the face of future storms and flooding. Again, as with the Flood Hazard Risk

Reduction Measures Grant Program, the HMGP and the New Jersey Resiliency Network, the Blue Acres Program is another tool to enhance the implementation of RCCI.

*Partnership with the N.J. Environmental Infrastructure Trust*

a.) The NJDEP has partnered with the New Jersey Environmental Infrastructure Trust (NJEIT) to provide financing for the hardening of water and wastewater infrastructure. Based on Federal Executive Order 11988, the NJDEP and the NJEIT developed mitigation/resiliency best practice documents for water and wastewater utilities. EO 11988 addresses the potential loss of the functions of the nation's floodplains as well as the increased cost to Federal, state and local governments from flooding disasters caused or exacerbated by development in vulnerable areas. When funding actions, Federal agencies are required to avoid, to the extent possible, adverse impacts associated with development in floodplains. Any critical action for which Federal funding assistance is provided is required to avoid or be elevated above the 500-year flood elevation. This includes projects or activities that are eligible for FEMA Public Assistance (PA) or other disaster relief or mitigation assistance from the HUD, U.S. Environmental Protection Agency (USEPA), and the USACE. The USEPA has indicated that any projects for which funding assistance is administered through that agency will be required to meet the minimum flood elevation thresholds stipulated by FEMA, as directed by EO 11988. Similarly, the State of New Jersey in partnership with the NJEIT, will condition all State-sourced State Revolving Fund financial assistance agreements to mirror the minimum Federal flood elevation threshold. The standards and best practices contained in these documents are required elements for new projects seeking State funding under the New Jersey Environmental Infrastructure Finance Program.

Auxiliary Power Guidance and Best Practices: This technical guidance document is intended to clarify the NJDEP's existing requirements as they apply to the provision of auxiliary power for wastewater and drinking water systems.

Infrastructure Flood Protection Guidance and Best Practices: To assist and guide system managers with their rebuild and resiliency efforts, this guidance document identifies design requirements governing recovery or mitigation activities for which federal and/or State funding assistance is provided and clarifies existing State regulations governing recovery or mitigation activities located in floodplains. This guidance document also encourages measures to enhance flood resiliency for both existing and new facilities where the above requirements do not apply or where systems opt to exceed minimum standards to maximize resiliency.

Emergency Response Preparedness/Planning Guidance and Best Practices: An Emergency Response Plan (ERP) is a document that describes the actions a water system will take in the event of an emergency in order to protect public health by maintaining a water supply sufficient for potable use and fire-fighting. The ERP is required pursuant to the Water Allocation rules, N.J.A.C. 7:19-11.2 and the Rules and Regulations Governing the Licensing of Water Supply and Wastewater Treatment System Operators, N.J.A.C. 7:10A-1.12. While many systems already comply with the requirement to develop and update an ERP, NJDEP has developed a detailed ERP template (See http://www.nj.gov/dep/watersupply/doc/erp-template.docx) in an effort to ensure that public community water systems comply with the requirement to regularly update and revise its ERP.

Asset Management Guidance and Best Practices: Many systems currently practice asset management to varying degrees. To ensure that all utilities operate their facilities so that they achieve compliance with the rules and/or terms and conditions of their permits, the NJDEP has developed this technical guidance that summarizes the elements of an asset management strategy

that will meet applicable regulatory requirements and promote more responsible investment and rehabilitation of New Jersey's drinking water and wastewater system infrastructure.

b.) This was not 309 driven.

c.) The implementation of EO 11988 through the NJDEP's partnership with the NJEIT will continue to be a top funding priority for the NJDEP's State Revolving Funds. It is widely recognized that the hardening of water and wastewater infrastructure is an integral component of any State resiliency and hazard mitigation program.

*National Fish and Wildlife Foundation: Building Ecological Solutions to Coastal Communities Hazards Grant*

This grant project is discussed under the Coastal Wetlands/Living Shorelines assessment.

**Enhancement Area Prioritization:**

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

| | |
|---|---|
| **High** | __X__ |
| **Medium** | _____ |
| **Low** | _____ |

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

Two years after Superstorm Sandy made landfall, many of New Jersey's coastal communities are still recovering from the storm and are only now beginning to transition to planning and redevelopment. In response to Superstorm Sandy, New Jersey's 2010-2015 309 Assessment/Strategy was amended to identify Coastal Hazards as a high priority issue. While the State has made significant progress toward addressing the vulnerabilities of coastal communities and resources, the work has really just begun. A number of the programs and projects identified above will produce results that align with the beginning of the 2016-2020 period.

The information throughout this Phase I Assessment demonstrates New Jersey's significant, and increasing, risk to coastal hazards. Hundreds of thousands of New Jersey's residents live in vulnerable areas; 67% of New Jersey's coastline is at high or very high risk to coastal erosion; 98% of the coastline is projected at medium or very high risk to sea level rise; and New Jersey's CVI mapping shows over 550,000 acres as highly vulnerable to coastal hazards.

In a NJDEP survey of over eighty coastal stakeholders, 85% said that the elimination or management of development in coastal high hazard areas was the greatest coastal hazards issue facing the NJCMP over the next five years.

# Cumulative and Secondary Impacts

**Section 309 Enhancement Objective:** Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources. §309(a)(5)

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

**Resource Characterization:**

1. Using National Ocean Economics Program Data on population and housing,[16] please indicate the change in population and housing units in the state's coastal counties between 2012 and 2007. You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970), but at a minimum, please show change over the most recent five year period (2012-2007) to approximate current assessment period.

| **Trends in Coastal Population and Housing Units*** | | | | |
|---|---|---|---|---|
| **Year** | **Population** | | **Housing** | |
| | Total (# of people) | % Change (compared to 2002) | Total (# of housing units) | % Change (compared to 2002) |
| 2007 | **7,806,882** | | **3,159,980** | |
| 2012 | **7,984,446** | **2.27** | **3,226,086** | **2.09** |

*Source: National Ocean Economics Program Data

2. Using provided reports from NOAA's Land Cover Atlas[17] or high-resolution C-CAP data[18] (Pacific and Caribbean Islands only); please indicate the status and trends for various land uses in the state's coastal counties between 2006 and 2011. You may use other information and include graphs and figures, as appropriate, to help illustrate the information.

   The data below are NJDEP's latest Land Use/Land Cover data for the years 2002 and 2012. The NJCMP believes that these data sets are more accurate than the NOAA data. Coastal Counties in this analysis include: Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Mercer, Middlesex, Monmouth, Ocean, Passaic, Salem, Somerset and Union.

[16] www.oceaneconomics.org/. Enter "Population and Housing" section. From drop-down boxes, select your state, and "all counties." Select the year (2012) and the year to compare it to (2007). Then select "coastal zone counties." Finally, be sure to check the "include density" box under the "Other Options" section.
[17] www.csc.noaa.gov/ccapatlas/. Summary data on land use trends for each coastal state is available on the ftp site.
[18] www.csc.noaa.gov/digitalcoast/data/ccaphighres. Summary data on land use trends for each coastal state is available on the ftp site.

| Land Cover Type** | Land Use Land Cover 2007 (Acres) | Land Use Land Cover 2012 (Acres) | Change (Acres) |
|---|---|---|---|
| Urban | 1,252,135.71 | 1,272,502.58 | 20,366.87 |
| Agriculture | 378,138.69 | 368,146.72 | -9,991.97 |
| Wetlands | 860,142.44 | 857,671.93 | -2,470.51 |
| Barren Land | 44,308.35 | 41,141.76 | -3,166.59 |
| Forest | 1,012,186.77 | 1,007,500.04 | -4,686.73 |
| Water | 260,172.50 | 260,121.44 | -51.06 |

**Source: NJ DEP Land Use/Land Cover data

3. Using provided reports from NOAA's Land Cover Atlas[19] or high-resolution C-CAP data[20] (Pacific and Caribbean Islands only), please indicate the status and trends for developed areas in the state's coastal counties between 2006 and 2011 in the two tables below. You may use other information and include graphs and figures, as appropriate, to help illustrate the information.

| Development Status and Trends for Coastal Counties** | | | |
|---|---|---|---|
| | **2007** | **2012** | **Percent Net Change** |
| Percent land area developed | **32.8** | **33.4** | **+1.8** |
| Percent impervious surface area | **11.4** | **11.6** | **+1.75** |

**Source: NJ DEP Land Use/Land Cover data

| How Land Use Is Changing in Coastal Counties** | |
|---|---|
| **Land Cover Type** | **Areas Lost to Development Between 2007-2012** (Acres) |
| Urban | 20,366.87 |
| Agriculture | -9,991.97 |
| Wetlands | -2,470.51 |
| Barren Land | -3,166.59 |
| Forest | -4,686.73 |
| Water | -51.06 |

**Source: NJ DEP Land Use/Land Cover data

4. Using data from NOAA's State of the Coast "Shoreline Type" viewer[21] indicate the percent of shoreline that falls into each shoreline type.[22] You may provide other information or use graphs or other visuals to help illustrate.

[19] www.csc.noaa.gov/ccapatlas/. Summary data on land use trends for each coastal state is available on the ftp site.
[20] www.csc.noaa.gov/digitalcoast/data/ccaphighres. Summary data on land use trends for each coastal state is available on the ftp site.
[21] http://stateofthecoast.noaa.gov/shoreline/welcome.html
[22] Note: Data are from NOAA's Environmental Sensitivity Index (ESI) Maps. Data from each state was collected in different years and some data may be over ten years old now. However, it can still provide a useful reference point absent more recent statewide data. Feel free to use more recent state data, if available, in place of ESI map data. Use a footnote to convey data's age and source (if other than ESI maps).

| Shoreline Types+ | |
|---|---|
| **Surveyed Shoreline Type** | **Percent of Shoreline** |
| Armored | 18 |
| Beaches | 4 |
| Flats | 2 |
| Rocky | 6 |
| Vegetated | 70 |

+Source: NOAA's State of the Coast Shoreline Viewer

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

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.

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

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

Regulations

*Flood Hazard Area Control Act Rules, N.J.A.C. 7:13 (Emergency Rule and readoption)*

a.) On January 24, 2013 the NJDEP adopted, on an emergency basis, amendments to the Flood Hazard Area Control Act rules at N.J.A.C. 7:13. These regulations were adopted on an emergency basis and became effective upon acceptance for filing by the New Jersey Office of Administrative Law. Concurrently, the provisions of the emergency adoption were proposed for

readoption pursuant to the rulemaking requirements of the Administrative Procedure Act, and became effective on March 25, 2013 upon acceptance for filing by the New Jersey Office of Administrative Law.

The rule changes relate to the construction and reconstruction of buildings in flood hazard areas based on the most recent and reliable flood elevation data. The amendments enable the use of the best available flood elevation data to determine the flood hazard area design flood elevation for a given site, including FEMA's recently released advisory flood maps for New Jersey's coast. The amendments also incorporate FEMA mapping issued as final (effective) that is developed in partnership with the NJDEP such that it depicts the NJDEP's flood hazard area design flood elevation and floodway limit; allow flood proofing measures to be used instead of elevating structures in certain, limited situations; and ensure consistency between the NJDEP's standards for elevating buildings in flood hazard areas with the building standards of the Uniform Construction Code promulgated by the Department of Community Affairs at N.J.A.C. 5:23.

b.) These changes were not 309 driven.

c.) The amendments will encourage individuals to relocate buildings further from regulated waters and require buildings to be constructed at higher elevations based upon more accurate flood elevation information. The NJDEP anticipates that this will subsequently reduce both the total amount of debris created during flood events that must be disposed of in landfills and the amount of debris and pollutants that commonly enter floodwaters when buildings are inundated. In the aftermath of Sandy, over 2.5 million cubic yards of debris from the storm had been removed with removal continuing. As a result of the storm, nearly 1,400 vessels were either sunk or abandoned. In Mantoloking alone, 58 buildings and eight cars were washed into Barnegat Bay. The amendments are designed to reduce these impacts in the event of future flooding events.

Assessment

*Land Use/Land Cover Data Update*

a.) NJDEP Land Use Land Cover (LU/LC) data. This data is intended to serve as a resource data set. The 2012 LU/LC data set is the fifth in a series of land use mapping efforts that began in 1986. Revisions and additions to the initial baseline layer were done in subsequent years from imagery captured in 1995/97, 2002 and 2007. This present 2012 update was created by comparing the 2007 LU/LC layer from NJ DEP's Geographical Information Systems (GIS) database to the 2012 color infrared imagery and by delineating and coding areas of change. LU/LC changes were captured by adding new line work and attribute data for the 2012 land use directly to the base data layer. All 2007 LU/LC polygons and attribute fields remain in this data set, so change analysis for the period 2007-2012 can be undertaken from this one layer.

b.) These changes were not 309 driven.

c.) The use of the updated 2012 LU/LC in land use analyses will provide an enhanced means of monitoring cumulative and secondary impacts, and the ecosystems of New Jersey through the use of diverse applications. The data set will provide information for regulators, planners, and others interested in LU/LC changes, and allow them to quantify those changes over time using GIS.

*Sustainable Communities*

a.) The NJCMP has been working with State partners to provide coastal communities with guidance and assistance in taking actions that result in sustainable community. Sustainable Coastal Communities include the coastal municipalities that have received either 1) a Sustainable Jersey© (SJ) Certification or 2) Plan Endorsement or a State Plan Policy Map amendment.

SJ Certification is a framework and suite of eligible actions, some mandatory and most elective, for municipalities to voluntarily become more sustainable. This includes implementing practices that support the local economy and use community resources, practice responsible environmental management and conservation and that embrace social equity and fairness. In 2013 and 2014, 30 coastal communities took sufficient actions to be certified by SJ.

Plan Endorsement is a program developed by the New Jersey State Planning Commission (SPC) to provide the technical assistance and the coordination for municipalities, counties, regional and State agencies to meet the publicly supported goals of the State Planning Act (N.J.S.A. 52:18A-196 et seq). It a voluntary review process and establishes a method by which government agencies at all levels may develop capital investment and planning decision-making mechanisms that are consistent with the State Development and Redevelopment Plan (State Plan) and are therefore coordinated with each other. In 2013 and 2014, four coastal communities were granted Plan Endorsement by the SPC.

b.) These changes were not 309 driven.

c.) Adoption of these municipal actions results in protection of coastal resources balanced with economic growth and development, resulting in a sustainable community. These actions, their promotion, and coordination at multiple levels of government also provide the NJCMP with the information and success stories on which to base future efforts.

<u>Management Plans</u>

*Final State Strategic Plan (Proposed for Adoption)*

a.) The State Planning Act requires the SPC to adopt a State Development and Redevelopment Plan. The SPC has proposed a State Strategic Plan, as a revision to the 2001 State Plan, which sets forth a vision for the future of the State along with strategies to achieve that vision. The draft Plan would phase out the development of the State Plan Policy Map, to be replaced by a criteria-based system to designate Priority Investment Areas. This would eliminate the basis for the CZM rules' CAFRA Planning Map and the planning process that the NJDEP has employed to designate areas for growth and resource protection since 2000. Initially through center designation and then the more comprehensive Plan Endorsement process, the NJDEP worked with coastal communities to develop local plans and implement ordinances that delineated growth areas and protected coastal resources. Through 2012, 29 coastal municipalities had plans that were incorporated into the CZM rules.

b.) These changes were not 309 driven.

c.) Without a vehicle and process, the NJDEP can no longer work with coastal communities to develop plans that accommodate growth and resource protection, and update planning maps. The New Jersey coast is a dynamic area, with the coastal economy and demographics changing as

some communities seek to grow and transition from seasonal to year-round populations, and others try to limit growth, protect community character and coastal resources. To continue a planning process, the NJCMP must develop and implement a municipal planning program to focus on protection of coastal resources and accommodating the development and economic needs of the coastal municipalities.

**Enhancement Area Prioritization:**

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

   **High** __X__
   **Medium** _____
   **Low** _____

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

   The NJDEP recognizes the importance and value of addressing cumulative and secondary impacts. This is recognized in the context of permitting individual projects, but is only applied in limited extent in NJDEP's land use planning efforts – identification of coastal planning areas and designated centers.

   The current CZM rules integrate the planning concepts of the State Plan. Planning areas and centers can currently be established or revised by first working with the SPC through plan endorsement. In light of the proposed State Strategic Plan which would significantly modify this integrated planning process, there is a need to revise NJDEP policies and procedures for CAFRA planning areas and centers (or their equivalent). Reevaluation of our current coastal community planning is also needed in order to continue protecting valuable coastal resources and encourage resilient communities. Through an updated coastal community planning process, the NJDEP could assist local decision makers by providing guidance on how to develop and redevelop in areas more resilient to coastal hazards, planned for growth with infrastructure, and that minimizing risk to environmental resources while increasing local economies and tourism sustainability.

# Energy and Government Facility Siting

**Section 309 Enhancement Objective:** Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance. §309(a)(8)[23]

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

**Resource Characterization:**

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

| Status and Trends in Energy Facilities and Activities in the Coastal Zone | | | | |
|---|---|---|---|---|
| **Type of Energy Facility/Activity** | **Exists in CZ** | | **Proposed in CZ** | |
| | (# or Y/N) | Change Since Last Assessment | (# or Y/N) | Change Since Last Assessment |
| *Energy Transport* | | | | |
| Pipelines[24] | Y | - | Y | increase |
| Electrical grid (transmission cables) | Y | - | Y | increase |
| Ports | Y | - | N | - |
| Liquid natural gas (LNG)[25] | N | - | N | - |
| Other (please specify) | | | | |
| *Energy Facilities* | | | | |
| Oil and gas | Y | - | N | - |
| Coal | | | | |
| Nuclear[26] | Y | - | N | |
| Wind | Y | Increase | Y | - |
| Wave[27] | N | - | - | - |
| Tidal[36] | N | - | N | - |
| Current (ocean, lake, river) [36] | N | - | N | - |
| Hydropower | N | - | N | - |

[23] CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8). NOAA regulations at 15 C.F.R. § 923.52 further describe what states need to do regarding national interest and consideration of interests that are greater than local interests.
[24] For approved pipelines (1997-present): www.ferc.gov/industries/gas/indus-act/pipelines/approved-projects.asp
[25] For approved FERC jurisdictional LNG import/export terminals: www.ferc.gov/industries/gas/indus-act/lng/exist-term.asp
[26] The Nuclear Regulatory Commission provides a coarse national map of where nuclear power reactors are located as well as a list that reflects there general locations: www.nrc.gov/reactors/operating/map-power-reactors.html
[27] For FERC hydrokinetic projects: www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics.asp

| Status and Trends in Energy Facilities and Activities in the Coastal Zone | | | | |
|---|---|---|---|---|
| **Type of Energy Facility/Activity** | **Exists in CZ** | | **Proposed in CZ** | |
| | (# or Y/N) | Change Since Last Assessment | (# or Y/N) | Change Since Last Assessment |
| Ocean thermal energy conversion | N | - | N | - |
| Solar | Y | Increase | Y | Increase |
| Biomass | N | - | N | - |
| Other (please specify) | | | | |

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

Offshore Wind

New Jersey's current Energy Master Plan (EMP) was released in December 2011 with a goal of installing at least 1100 MWs of offshore wind by 2020. The Federal Bureau of Ocean Energy Management (BOEM) coordinates Outer Continental Shelf (OCS) renewable energy activities offshore of New Jersey through its Intergovernmental Renewable Energy Task Force, which is made up of representatives from federal, state, local and tribal governments. On April 20, 2011 BOEM issued a Call for Information and Nominations (Call) which identified approximately 350,000 acres in federal waters for the development of offshore wind. In response to the Call, 11 companies expressed interest in developing offshore wind projects, resulting in the utilization of BOEM's lengthier competitive lease auction process. Subsequently, on February 3, 2012 BOEM published a Notice of Availability of an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for commercial wind lease and site assessment activities on the Atlantic OCS offshore New Jersey. Additionally, on July 21, 2014 BOEM published a Proposed Sale Notice in the Federal Register requesting public comments on BOEM's proposal to auction two leases offshore New Jersey for commercial wind development. BOEM expects to conduct a lease auction in 2015 as a next step in the process of developing New Jersey's offshore wind resources.

Onshore Wind

Although there is a great deal of interest in siting large-scale wind turbines offshore, there has also been interest in siting wind 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. Since November 2011 there have been 13 onshore wind turbine projects developed at municipal, commercial, farm and residential facilities in New Jersey's coastal zone. (http://www.njcleanenergy.com/renewable-energy/project-activity-reports/installation-summary-by-technology/wind-biopower-and-fuel-cell-installation-reports ).

Solar

According to the EMP, "As of January 2010, the Solar Energy Advancement and Fair Competition Act (SEAFCA or the Solar Advancement Act) requires a separate obligation for solar energy that

requires electricity suppliers to procure an increasing amount of electricity from in-state solar electric generators, reaching at least 2,518 GWh by 2021, and at least 5,316 GWh of electricity by 2026 and each year thereafter." In 2012, the solar compliance schedule was reverted back to a percentage-based target of 4.1% by EY 2028 by L. 2012, c. 24 ("Solar Act"). As of February 2015, approximately 34,000 homes and businesses have installed a solar electric system.

In 2012, P.L. 2012, c.4 was enacted. This legislation exempts solar panels from being designated as an impervious surface or impervious cover as it applies to various laws relating to municipal land use, stormwater management, and the Highlands, including agricultural development. This legislation amended the Waterfront Development Law and CAFRA to define solar panel and to provide that the NJDEP shall not as a condition of any approval issued under these statutes, include solar panels in any calculation of impervious surface or impervious cover. In 2015, the NJDEP adopted regulatory amendments to the CZM rules that implement this legislation. Specifically, the CZM rules were amended to provide that a solar panel is not counted toward the impervious cover limit for a site, but the base or foundation of the solar panel, canopy or array will be counted toward the impervious cover on the site.

LNG

Since the previous assessment, there has been continued interest in deep water port Liquefied Natural Gas (LNG) facilities. In February 2011, Governor Chris Christie vetoed a proposed Deepwater Port LNG facility off the New Jersey coastline, based on environmental concerns for New Jersey's coastal uses and resources. The proposed Port Ambrose project was modified and resubmitted to the Maritime Administration (MARAD) and U. S. Coast Guard (USCG). MARAD and the USCG have found New Jersey to be an Adjacent Coastal State, as defined by the Deepwater Port Act. The project is currently working through the application process with MARAD and the USCG.

Pipelines

Based on New Jersey's EMP, the certification of expanded or new pipeline facilities is the responsibility of the Federal Energy Regulatory Commission (FERC). There are currently five pipelines in various stages of proposal in New Jersey (FERC.gov, projects near you website). In January 2014, the New Jersey Pinelands Commission rejected a request by South Jersey Gas for a waiver allowing it to build part of a 22-mile natural gas pipeline meant to serve B.L. England electric generation plant through protected pinelands forest.

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance[28] in the state's coastal zone since the last assessment.

In the previous assessment, some major issues centered on the Fort Monmouth base closure and the LORAN transmission termination. During this assessment period there have not been any major changes to the existing Fort Monmouth facility.

[28] The CMP should make its own assessment of what Government facilities may be considered "greater than local significance" in its coastal zone, but these facilities could include military installations or a significant federal government complex. An individual federal building may not rise to a level worthy of discussion here beyond a very cursory (if any at all) mention).

**Management Characterization:**

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

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

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

There were no management categories with significant changes since the last assessment.

**Enhancement Area Prioritization:**

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

    **High** _____
    **Medium** __X__
    **Low** _____

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

    Although this enhancement area is important to the NJCMP, it will be addressed under current regulatory processes and other enhancement areas. While no strategy is being developed for this enhancement area, planning for offshore energy development will be addressed under the Ocean Resources strategy. The NJCMP has determined that comprehensive ocean planning will be the most effective way to address and manage the growing interest in energy development in coastal and offshore waters.

# Marine Debris Assessment

**Section 309 Enhancement Objective:** Reducing marine debris entering the nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

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

**Resource Characterization:**

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

| Source of Marine Debris | Existing Status and Trends of Marine Debris in Coastal Zone | | |
|---|---|---|---|
| | **Significance of Source** (H, M, L, unknown) | **Type of Impact** (aesthetic, resource damage, user conflicts, other) | **Change Since Last Assessment** (Y, N) |
| *Land-based* | | | |
| Beach/shore litter | H | Aesthetic, resource damage | N |
| Dumping | unknown | Aesthetic, resource damage, water quality impairment | Y |
| Storm drains and runoff | M | Aesthetic, resource damage, water quality impairment | Y |
| Fishing (e.g., fishing line, gear) | L | Resource damage | N |
| Combined Sewer Overflows (CSO's) | M | Aesthetic, resource damage, water quality impairment | Y |
| *Ocean or Great Lake-based* | | | |
| Fishing (e.g., derelict fishing gear) | L | Resource damage | N |
| Derelict vessels | L | Aesthetic, navigational hazard | N |

| | | | |
|---|---|---|---|
| Vessel-based (e.g., cruise ship, cargo ship, general vessel) | L | Aesthetic, resource damage | N |
| Hurricane/Storm | H | Aesthetic, resource damage, navigational hazard, human health and safety | Y |
| Tsunami | L | Aesthetic, resource damage, navigational hazard, human health and safety | N |
| Other : Coastal currents transporting marine debris from other states to NJ coastal waters | H | Aesthetic, Resource damage, water quality | N |

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

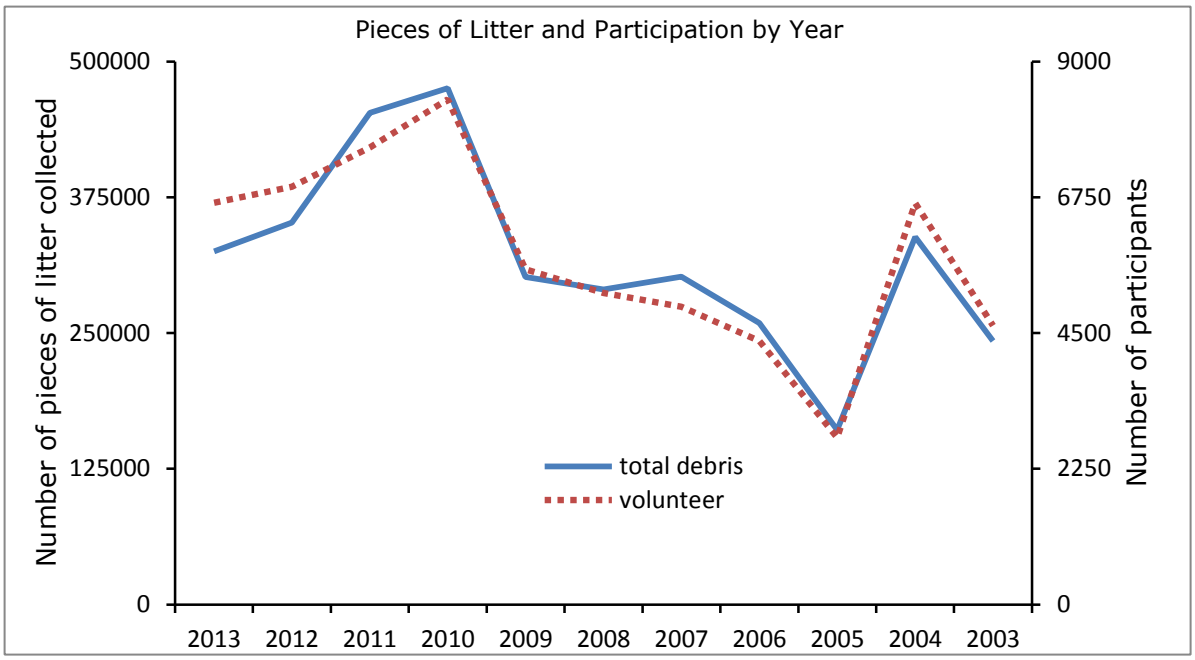
Land-Based Beach/Shore Litter

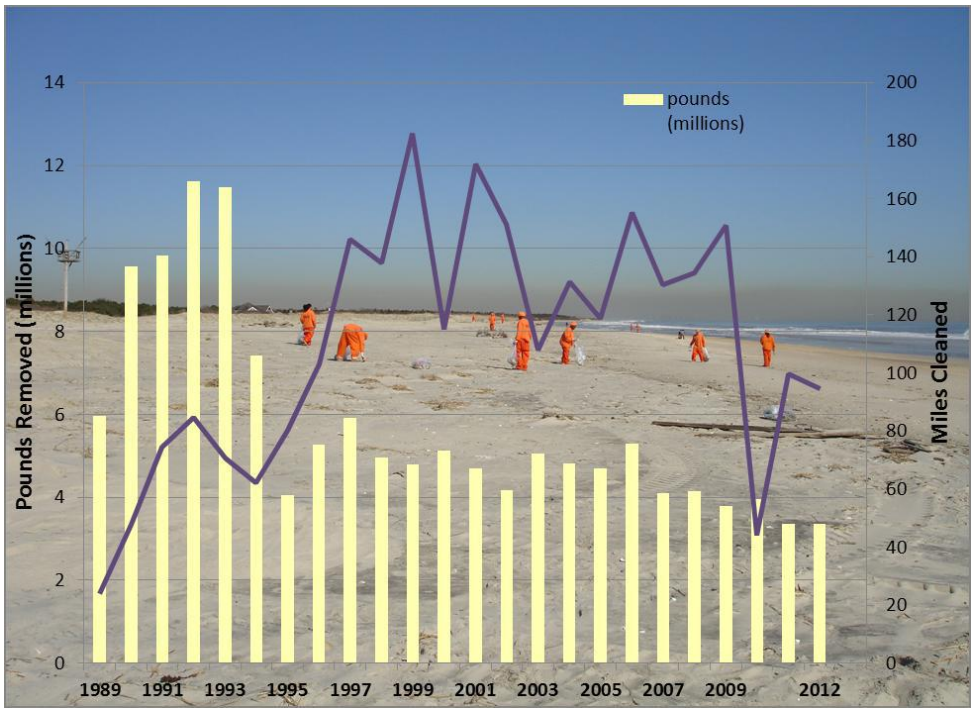
Beach litter remains a problem along New Jersey's coast. The Ocean Conservancy's International Coastal Cleanup is one of the main organized cleanup events. Data from all available years is provided below:

| Year | Number of pieces of litter collected |
|---|---|
| 2004 | 14,050 |
| 2005 | 16,690 |
| 2006 | 68,666 |
| ~ | ~ |
| 2008 | 87,270 |
| 2009 | 72,811 |
| ~ | ~ |
| 2013 | 195,947 |

The data suggests that beach litter has increased steadily. The increase, however, may be the result of better reporting protocols and increased participant turn out and, thus, more litter collection. The

direct correlation between amount of litter collected and participation can be seen using beach cleanup data from Clean Ocean Action:

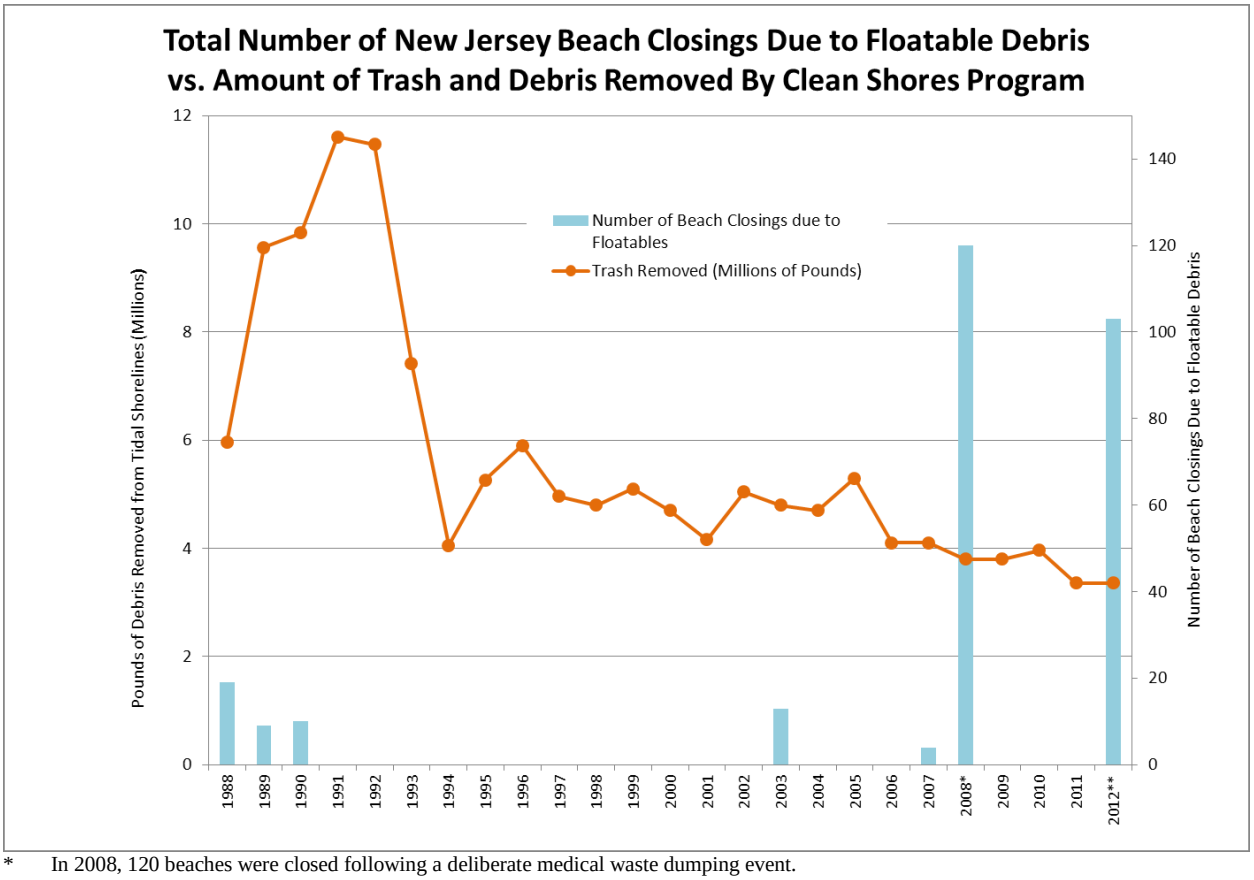


New Jersey communities and environmental organizations continue to organize cleanups and advocate for cleaner waterways. Cigarette butts remain the largest contributor to litter along New Jersey's beaches. New Jersey continues to use the Clean Shores program to remove floatables such as wood, garbage, medical waste and recyclables from tidal shorelines. This program uses 10 inmates to remove debris from a sponsoring municipality.

Since its start, the Clean Shores program has removed over 140 million pounds of floatables and is funded entirely by the "Shore to Please" license plate. In 2013, the Clean Shores Program collected 3.3 million pounds of floatables. After Superstorm Sandy, between September 30, 2013 and October 1, 2014, the Clean Shores Program conducted 40 cleanups and removed 2,453,000 pounds of trash and debris from 125.5 miles of shoreline. Annually, the Clean Shores program collects approximately 5.63 million pounds of debris from the shoreline.

Since the program's inception in 1989, there have been only seven summers in which floatable debris has caused New Jersey beaches to close. While this is an impressive record, the NJDEP is committed to the Clean Shores Program and to the goal of further reducing closures of New Jersey beaches due to floatable debris.




* In 2008, 120 beaches were closed following a deliberate medical waste dumping event.

** In 2012, 103 beaches were closed following a one-day wash-up of trash, including more than 50 syringes. Heavy rains the previous week caused combined sewers in New York and New Jersey to overflow into the shared waters of the New York Harbor.

According to the 2013 the *New York Bight Floatables Action Plan Assessment Report*, New Jersey beaches experienced no beach closings due to floatable debris in 2013. The interagency implementation of the *Floatables Action Plan* was a major contributor to maintaining this improved

beach status. Forty-eight significant floatable slicks were observed in 2013. The Lower New York Harbor and Newark Bay had the most slicks observed, with fourteen each. These slicks have been attributed to the effects of Superstorm Sandy.

New Jersey is the only coastal state that performs routine aircraft surveillance in order to detect the presence of floatables in its coastal waters. The NJDEP's plane flies along the State's coastline six days of each week during the summer months. NJDEP staff on board the plane search the waters for floatables and report sightings to nearby municipalities and the USEPA. When floatables are within reach of skimmer boats, USEPA coordinates removal of the observed floatables with the USACE. USEPA aerial surveillance via helicopter has been an ongoing component of the Floatables Action Plan; however, as of June 2014 the US Helicopter Program was not funded for the 2014 season.

In addition, one of New Jersey's partners in the Floatables Action Plan, the Passaic Valley Sewerage Commissioners (PVSC), implements the Passaic River/Newark Bay Restoration Program. The Program was designed to combat pollution as well as assist in flooding abatement within PVSC's five county service area on Newark Bay, the Passaic River and its tributaries while promoting their recreational and economic uses. The program is comprised of three elements – volunteer shoreline clean-ups, skimmer vessel floatables removal, and community or municipality requested clean-ups. The skimmer vessel collected approximately 190.11 tons of debris, and the shoreline cleanup efforts collected 329.48 tons of debris, in 2014.

Land-Based Storm Drains and Runoff

As part of the requirements of a NJDEP-issued municipal stormwater permit, permittees must conduct street sweeping, retrofit storm drains, and remove debris from storm drains. They are also required to monitor and submit the data to the NJDEP. Below is the data for 2011-2013 from the Municipal Stormwater Regulation Program Annual Report and Certification.

Street Sweeping Debris Collected in Tons

| | |
|---|---|
| 2011 | 237,725 |
| 2012 | 202,411 |
| 2013 | 164,441 |

Storm Drain Inlets Retrofitted

| | |
|---|---|
| 2011 | 17,538 |
| 2012 | 15,222 |
| 2013 | 13,174 |

Debris Removed from Storm Drains in Tons

| | |
|---|---|
| 2011 | 47,833 |
| 2012 | 53,166 |
| 2013 | 48,482 |

**Management Characterization:**

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

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

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

Ocean-Based-Hurricane/Storm

*Superstorm Sandy*

a.) As of January 1, 2014, the State had completed its 10-month FEMA-funded effort to remove Superstorm Sandy debris from the State's waterways. As part of this project, State contractors removed: 106,353 cubic yards of debris from State waterways, including 195 vessels/vehicles; 160,000 cubic yards of sediment from 27 severely impacted marinas, and 323,214 cubic yards of sediment from back bay "over wash" areas.

Debris and sediment removed from State waters under this project was limited by FEMA requirements: (i.e., the debris was Sandy-related and it had to be removed to eliminate an immediate threat to life, public health and safety, and/or to ensure the economic recovery of the community at large). In addition, it was specific to State waters and property within the storm surge, and precluded efforts in waters or wildlife areas owned or maintained by the federal government.

b.) This was not 309 driven.

c.) This project was effective in removing Superstorm Sandy-related debris and in leading to the development of the Disaster Debris Management Planning Tool Kit discussed below.

*Disaster Debris Management Planning Tool Kit*

a.) Superstorm Sandy resulted in severe flooding and downed trees that generated over 8 million cubic yards of debris across the nine hardest hit counties in only one day. A key lesson learned from Superstorm Sandy is that immediate response to debris collection and disposal is essential to a community's swift recovery from a disaster. NJDEP released the ***Disaster Debris Management Planning Tool Kit*** in March 2015 to assist municipal officials in developing effective emergency debris management plans to aid their recovery from events that generate volumes of debris. This document provides guidance to municipalities on how to plan for debris removal after storms. The tool kit is available at www.nj.gov/dep/dshw/toolkit.pdf.

b.) This was not 309 driven.

c.) This led to the development of the storm debris toolkit mentioned above.

Land-Based Hurricane/Storm

*Flood Hazard Area Control Act Rules, N.J.A.C. 7:13 (Emergency Rule and readoption)*

a.) On January 24, 2013 the NJDEP adopted, on an emergency basis, amendments to the Flood Hazard Area Control Act rules at N.J.A.C. 7:13. These regulations were adopted on an emergency basis and became effective upon acceptance for filing by the New Jersey Office of Administrative Law. Concurrently, the provisions of the emergency adoption were proposed for readoption pursuant to the rulemaking requirements of the Administrative Procedure Act, and became effective on March 25, 2013 upon acceptance for filing by the New Jersey Office of Administrative Law.

The regulatory amendments relate to the construction and reconstruction of buildings in flood hazard areas based on the most recent and reliable flood elevation data. The amendments enable the use of the best available flood elevation data to determine the flood hazard area design flood elevation for a given site, including FEMA's recently released advisory flood maps for New Jersey's coast. The amendments also incorporate FEMA mapping issued as final (effective) that is developed in partnership with the NJDEP such that it depicts the NJDEP's flood hazard area design flood elevation and floodway limit; allow flood proofing measures to be used instead of elevating structures in certain, limited situations; and ensure consistency between the NJDEP's standards for elevating buildings in flood hazard areas with the building standards of the Uniform Construction Code promulgated by the Department of Community Affairs at N.J.A.C. 5:23.

b.) This was not 309 driven.

c.) The regulatory amendments will encourage individuals to relocate buildings further from regulated waters and require buildings to be constructed at higher elevations based upon more accurate flood elevation information. The NJDEP anticipates that this will subsequently reduce both the total amount of debris created during flood events that must be disposed of in landfills and the amount of debris and pollutants that commonly enter floodwaters when buildings are inundated. In the aftermath of Superstorm Sandy, over 2.5 million cubic yards of debris from the storm had been removed with removal continuing. As a result of the storm, nearly 1,400 vessels were either sunk or abandoned. In Mantoloking alone, 58 buildings and eight cars were washed into Barnegat Bay. The amendments are designed to reduce these impacts in the event of future flooding events.

*Land-Based Dumping*

a.) There have been significant changes in land based dumping since the last assessment period. New Jersey has interpreted this source as illegal dumping on land at near shore locations. There is evidence of people traveling to sparsely populated areas, particularly publicly owned-lands, to dispose of waste material that they cannot place for curbside collection due to its size, quantity or make-up, and for which they would have to pay for removal. Much of the New Jersey coastal area is remote enough to allow for these actions to proceed uninterrupted. Railroad tracks also seem to be a location for illegal dumping. However, it is unknown how much of the material from this source of illegal dumping ends up as marine debris. In 2014 the State began an aggressive crackdown in illegal dumping on state parks and recreational lands, called "Don't Waste Our

Open Space". With the combined efforts of NJDEP parks, fish and wildlife, solid waste, water resources, and compliance and enforcement programs, State Park Police, State Conservation Police, State Forestry Services, and the Natural Lands Trust, as well as State Police enforcement actions have been issued on 20 people and resulting in nearly $480,000 in fines. Of those enforcement actions, more than half occurred in the coastal zone. The campaign is using strategically placed hidden cameras in state parks to catch violators. The aggressive tactics and penalties being used will hopefully send a message to would be violators to "Don't Waste Our Open Space". More can be found at www.stopdumping.nj.gov with information on how to properly dispose of waste and a reporting hotline.

b.) This was not 309 driven.

c.) Looking ahead, the State will continue to commit resources to the "Don't Waste Our Open Space" initiative to prosecute offenders to the fullest extent of the law. With the overall aggressive approach to enforcing illegal dumping regulations on State-owned land, it is anticipated that this initiative will have a positive impact the efforts to limit marine debris.

*Land-Based Storm Drains and Runoff*

a.) The NJDEP and the NJEIT are jointly working to effectuate meaningful water quality improvements in the Barnegat Bay watershed as a component of the Governor's Barnegat Bay Action Plan to Address the Ecological Decline of Barnegat Bay (Governor's Action Plan). A primary objective of the State Fiscal Year (SFY) 2012 New Jersey Environmental Infrastructure Financing Program (NJEIFP) is to fund projects designed to remove pollutants including debris that adversely impact the Barnegat Bay.

The State identified and prioritized funding for projects designed to address nutrient pollution of Barnegat Bay from stormwater basins. Eligible projects include stormwater sewer repairs, stormwater basin retrofits, salt dome coverings, truck wash facilities, street sweeping/leaf collection equipment, septic management, and land acquisition. There are approximately 2,500 stormwater basins and facilities in the Barnegat Bay watershed, owned by either Ocean or Monmouth County, municipalities and other entities. To improve stormwater management and decrease stormwater runoff into the Barnegat Bay, the NJDEP recommends projects to the NJEIT to finance with zero-interest or low-interest loans. The NJDEP is prioritizing Barnegat Bay projects within these recommendations.

The NJDEP is also converting the New Jersey Stormwater BMP Manual, as well as some of the Frequently Asked Questions presently on www.njstormwater.org, to a Technical Manual and evaluating potential amendments to the NJDEP's Stormwater Management Rules , N.J.A.C. 7:8 through a stakeholder process.

b.) This was not 309 driven.

c.) The reforms made by the State on education, research, infrastructure funding, and limiting nutrients flowing into the Barnegat Bay may help bring back some of the health of the Barnegat Bay. Ongoing monitoring will determine if these actions were successful.

*Land-Based Combined Sewer Overflows*

a.) Currently, there are 193 Combined Sewer Overflows (CSOs) discharging into New Jersey's tidal waters. Ninety percent of these discharges have end of pipe solids/floatables removal mechanisms such as nets or bar screens. At this time, the NJDEP does not have data as to how much debris is

captured by these mechanisms. In March 2015, the Department issued 25 individual CSO permits which build on the previous general permit requirements. The permits became effective July 1, 2015. Among other things, the individual permits require the permittees to monitor and report on the amount of solids/floatables captured. This data will be entered into the New Jersey Environmental Management System (NJEMS) and be available to the public in the NJDEP's public database, Data Miner.

The goal of the CSO permits is to meet the requirements of the Clean Water Act and the National CSO Policy by reducing or eliminating the remaining CSO outfalls in New Jersey. In order to achieve the reduction or elimination of outfalls, CSO permittees will need to reduce flooding, ensure proper operation, maintenance and management of existing infrastructure and provide opportunities for green infrastructure. These permits reinforce the importance of properly operated and maintained water infrastructure systems in protecting public health and the environment and supporting economic redevelopment. A major emphasis of the permit process is the development of regional strategies to reduce the amount of stormwater that flows into combined sewer systems, through the development and implementation of a Long Term Control Plan (LTCP). The LTCP is a system wide evaluation of the sewage infrastructure, and the hydraulic relationship between the sewers, precipitation, treatment capacity and overflows. As part of the LTCP, the permittee must evaluate alternatives that will reduce or eliminate the discharges, and develop a plan and implementation schedule to do so. LTCPs are created to identify the most cost-effective manner to regulate CSOs to meet water quality standards. The permittee must establish a public participation process that actively involves the affected public throughout the process. Permittees will be required to submit their LTCP within 36 months of the effective date of the permit, and provide for implementation of the plan immediately following the NJDEP's approval. Finally, the CSO individual permits require the permittees to consider green infrastructure technologies when evaluating how to decrease or eliminate a CSO, under a LTCP. For additional information concerning the individual CSO permits see http://www.nj.gov/dep/dwq/cso.htm.

b.) This was not 309 driven.

c.) In March 2015, the NJDEP issued the first round of new CSO individual permits to 25 entities representing both municipal and county governments, wastewater treatment plants, and sewage authorities. Of the 25 permits issued, 16 of the permits were issued to entities within the coastal zone, for discharges to tidal waterways. As part of the required LTCP, the permittee must evaluate alternatives that will reduce or eliminate the discharges, and develop a plan and implementation schedule to do so.

*Barnegat Bay Blitz*

a.) As part of the Governor's Action Plan, the NJDEP, in partnership with the New Jersey Clean Communities Council, initiated the annual Barnegat Bay Blitz, a watershed-wide cleanup event. The Blitz brings together residents, students, businesses and local governments to clean up their communities and foster ownership, pride and stewardship of the Barnegat Bay watershed, which includes 37 municipalities in Ocean and Monmouth County, covering 660 square miles. Since the Action Plan was announced in 2010, five successful Blitz cleanups have occurred, resulting in the collection of thousands of pounds of litter. The first Blitz in October 2011 had over 2400 volunteers participate in all 37 Barnegat Bay municipalities, collecting 731 bags of trash, 575 bags of recycling, plus 3 dumpsters and 3 dump trucks of large debris. The NJDEP conducted four more Blitz watershed-wide cleanup events between May of 2013 and April of 2014, collecting over 5000 bags of trash and recycling and filling over 75 dumpsters with large debris.

Subsequently, the NJDEP began the annual Barnegat Bay Blitz Rain Barrel Challenge (Challenge) in 2014. The Challenge is a competition that engages schools and youth groups located in the Barnegat Bay watershed to learn about the Bay and how to protect its water quality and natural resources. The students investigate the theme of the Challenge then work together to design rain barrels that address the theme. The theme for the 2015 Challenge is *From Land to the Barnegat Bay-The Natural Areas of Our Watershed*. This theme was chosen so that participants can explore the natural land areas that lead into the Barnegat Bay, such as forests, marsh, meadows, and grassy areas. The NJDEP will continue to sponsor the Barnegat Bay Blitz as the centerpiece of the Governor's outreach and education strategy for the Action Plan.

b.) This was not 309 driven.

c.) The reforms made by the State on education, research, infrastructure funding, and limiting nutrients flowing into the Bay may help bring back some of the health of the Bay. Ongoing monitoring will determine if these actions were successful.

*Barnegat Bay Funding Initiative*

a.) A significant change that impacts the water quality of Barnegat Bay was enactment of P.L. 2011, c. 114 which requires the New Jersey Department of Transportation (NJDOT) to identify all malfunctioning stormwater basins in the Barnegat Bay watershed owned by State transportation entities, and to submit to the Governor and the Legislature a prioritized list of repairs. In addition, the bill requires NJDOT and the New Jersey Turnpike Authority to include the repair of malfunctioning stormwater basins in their annual capital projects.

On January 28, 2011, the NJDEP distributed a public notice that described the Barnegat Bay Stormwater Runoff Mitigation Financing Opportunities and announced other changes to the SFY 2011 Priority System/Intended Use Plan proposal for the Clean Water State Revolving Fund. The Priority List identifies projects targeted for financial assistance from the fund and identifies the estimated total eligible building costs under the appropriate project category.

In SFY 2012, the NJDEP established a reserve fund of up to $17 million in Clean Water SRF monies to support the Barnegat Bay Stormwater Runoff Mitigation initiative. For the SFY 2013 Program, the NJDEP allocated $10 million to provide loans for up to 100% of the allowable project costs.

b.) This was not 309 driven.

c.) The reforms made by the State on education, research, infrastructure funding, and limiting nutrients flowing into the Barnegat Bay may help bring back some of the health of the Bay. Ongoing monitoring will determine if these actions were successful.

**Enhancement Area Prioritization:**

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

**High** _____
**Medium** ____
**Low** __X__

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

   The NJDEP will continue to address marine debris issues through other programs beyond the NJCMP as detailed in this Assessment.

# Ocean and Great Lakes Resources

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

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

**Resource Characterization:**

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. Using Economics: National Ocean Watch (ENOW),[29] indicate the status of the ocean and Great Lakes economy as of 2010, as well as the change since 2005, in the tables below. Include graphs and figures, as appropriate, to help illustrate the information.

| Status of Ocean and Great Lakes Economy for Coastal Counties (2010) | | | | |
|---|---|---|---|---|
| | **Establishments** (# of Establishments) | **Employment** (# of Jobs) | **Wages** (Millions of Dollars) | **GDP** (Millions of Dollars) |
| Living Resources | 208 | 1,201 | $ 45,437,000 | $110,441,000 |
| Marine Construction | 154 | 1,880 | $ 144,499,000 | $264,250,000 |
| Marine Transportation | 783 | 36,344 | $2,407,439,000 | $4,151,464,000 |
| Offshore Mineral Extraction | 68 | 623 | $ 35,754,000 | $30,803,000 |
| Tourism & Recreation | 7,299 | 78,045 | $1,465,281,000 | $2,864,528,000 |
| All Ocean Sectors | 8,544 | 119,042 | $4,139,573,000 | $7,464,071,000 |

| Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2010) | | | | |
|---|---|---|---|---|
| | **Establishments** (% change) | **Employment** (% change) | **Wages** (% change) | **GDP** (% change) |
| Living Resources | *-10* | *-25* | *-5* | *-0.75* |
| Marine Construction | *-2* | *-25* | *-11* | *-19* |
| Marine Transportation | *2* | *-2* | *6* | *14* |

[29] www.csc.noaa.gov/enow/explorer/. If you select any coastal county for your state, you receive a table comparing county data to state coastal county, regional, and national information. Use the state column for your responses.

| Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2010) | | | | |
|---|---|---|---|---|
| | **Establishments** (% change) | **Employment** (% change) | **Wages** (% change) | **GDP** (% change) |
| Offshore Mineral Extraction | *-9* | *-26* | *-24* | *-53* |
| Tourism & Recreation | *11* | *9* | *16* | *16* |
| All Ocean Sectors | *9* | *3* | *7* | *11* |

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

| Significant Changes to Ocean and Great Lakes Resources and Uses | |
|---|---|
| **Resource/Use** | **Change in the Threat to the Resource or Use Conflict Since Last Assessment** |
| **Resource** | |
| Benthic habitat (including coral reefs) | Same |
| Living marine resources (fish, shellfish, marine mammals, birds, etc.) | Same |
| Sand/gravel | Increase |
| Cultural/historic | Same |
| Other (please specify) | |
| **Use** | |
| Transportation/navigation | Same |
| Offshore development[30] | Same |
| Energy production | Same |
| Fishing (commercial and recreational) | Same |
| Recreation/tourism | Same |
| Sand/gravel extraction | Increase/same |
| Dredge disposal | Same |
| Aquaculture | Increase |
| Other (please specify) | |

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

[30] Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the "energy production" category.

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

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

**Management Characterization:**

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

| **Management Category** | **Employed by State or Territory** (Y or N) | **CMP Provides Assistance to Locals that Employ** (Y or N) | **Significant Changes Since Last Assessment** (Y or N) |
|---|---|---|---|
| Statutes, regulations, policies, or case law interpreting these | Y | N | Y |
| Regional comprehensive ocean/Great Lakes management plans | Y | N | Y |
| State comprehensive ocean/Great Lakes management plans | N | N | N |
| Single-sector management plans | N | N | N |

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

New Jersey Saltwater Recreational Registry Program

a.) In 2006 NOAA was charged with the creation of a universal phonebook, or registry, of all current saltwater anglers in the United States. The registry was developed to allow NOAA to quickly and easily contact current saltwater anglers in an effort to gain more accurate and timely information on recreational fisheries. States were allowed to establish their own registry program for saltwater anglers that fished in their state. The NJDEP established its own registry program, the New Jersey Saltwater Recreational Registry Program, to exempt saltwater recreational anglers fishing in New Jersey's marine and tidal waters from the federal registry and the $15.00 federal registration fee imposed in 2011. The New Jersey Saltwater Recreational Registry Program became effective May 4, 2011 through Administrative Order No. 2011-05.

b.) This was not 309 driven.

c.) The registry is an important tool that will help fishermen and policy makers work together to better account for the contributions and impacts of saltwater anglers on ocean ecosystems and coastal economies. It is part of a national overhaul of the way NOAA collects and reports recreational fishing data. The goal of the initiative, known as the Marine Recreational Information Program, is to provide the most accurate information possible that can be used to determine the health of fish stocks. Reliable, universally trusted data will in turn aid anglers, fisheries managers and other stakeholders in their combined efforts to effectively and fairly set the rules that will ensure the long-term sustainability of recreational fishing. For more information, visit www.CountMyFish.noaa.gov.

New Jersey Menhaden Fishery

a.) N.J.S.A. 23:3-51 and 52 implemented a new management program for commercial Atlantic menhaden fishery. The first bill was passed in 2013 and it was slightly modified in 2014. New Jersey was allocated 11.19% of the newly established total coast-wide quota. The New Jersey Marine Fisheries Administration is responsible for the implementation and monitoring of this commercial menhaden quota. In order to effectively monitor commercial menhaden landings in New Jersey and implement the quota, a number of new licenses have been established; New Jersey Menhaden Landing License is required if landing for the purpose of sale more than 100 pounds of menhaden at any time; New Jersey Menhaden Dealers License is required if buying or selling menhaden, as the first point of contact (ex. buying directly from an appropriately licensed commercial fishermen); Menhaden Purse Seine Fishing Vessel Operators License is required if the Menhaden Purse Seine Fishing Vessel License owner is not the operator of the licensed purse seine vessel (i.e. issued to an operator/captain if person is not the owner of the Menhaden Purse Seine Fishing Vessel License).

b.) This was not 309 driven.

c.) The outcome of this licensing program will be tracking and implementing the quota for the commercial Atlantic menhaden fishery.

Regional Comprehensive Ocean Management Program

a.) In 2010, Presidential Executive Order 13547 established a National Ocean Policy (NOP) to guide the protection, maintenance, and restoration of America's oceans and coasts. The NOP requires

federal agencies to work in a more coordinated, goal-oriented framework with states, tribes, and stakeholders. The NOP also calls for the creation of Regional Planning Bodies (RPBs) to coordinate and implement regional ocean planning with state, federal, tribal, and fishery management council representatives. The Mid-Atlantic RPB was formally established in April 2013. It will leverage existing efforts underway by states and regional entities, and engage stakeholders and technical experts at every key step.

During the previous assessment period, 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 establishes guiding principles as the foundation for collaboration and establishes four initial priorities for shared action:

1. Coordinate protection of important habitats and sensitive and unique offshore areas on a regional scale;
2. Promote improvements in the region's coastal water quality;
3. Collaborate on a regional approach to support the sustainable development of renewable energy in offshore areas; and
4. 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.

b.) This was a 309 driven change. Currently these efforts are staffed through the states' coastal programs, with state coastal program staff responsible for the day to day coordination of both MARCO and RPB actions and program development.

c.) New Jersey's continued participation in MARCO and the Mid-Atlantic RPB enables closer collaboration with the region and opens more effective dialog with the federal government, Tribal Nations, fisheries management councils, and stakeholders on issues of importance to the region and will, through ocean planning efforts, enable a more comprehensive approach to managing uses and resources**.**

3. Indicate if your state or territory has a comprehensive ocean or Great Lakes management plan.

| **Comprehensive Ocean/Great Lakes Management Plan** | **State Plan** | **Regional Plan** |
|---|---|---|
| Completed plan (Y/N)<br>(If yes, specify year completed) | N | N |
| Under development (Y/N) | N | Y |
| Web address (if available) | | www.Midatlanticocean.org<br>www.boem.gov/Mid-Atlantic-Regional-Planning-Body/ |
| Area covered by plan | | NY to Virginia |

**Enhancement Area Prioritization:**

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

   High __X__
   Medium _____
   Low _____

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

   This enhancement area is given a high priority because of the continued and increasing demands placed on the ocean environment. There is 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. The increased demand to use the ocean for both alternative and conventional energy, coupled with the need for better management of existing uses and resources, makes it clear that the NJCMP will have to continue to focus attention on ocean resources management, including the continuation of efforts with MARCO, the Mid-Atlantic RPB, and working with federal agencies to advance ocean planning.

# Public Access

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

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

**Resource Characterization:**

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

| Public Access Status and Trends | | | |
|---|---|---|---|
| Type of Access | Current number[31] | Changes or Trends Since Last Assessment[32] | Cite data source |
| Beach 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.<br><br>Atlantic Coast inventory recorded over 1,300 access ways along the Atlantic Ocean | No change | 2011-2015 309 Assessment: Atlantic Coast Inventory 2001 |
| Shoreline (other than beach) access sites | 1,792 miles | No change | NJCMP Program Document and 2011-2015 309 Assessment |
| Recreational boat (power or non-motorized) access sites | 262 boat ramps<br><br>Note: not all ramp owners choose to be listed | No change | NJ Boater's Ramp Guide 2007 NJMSC/NJ Sea Grant and the 2001-2015 309 Assessment |
| Number of designated scenic vistas or overlook points | Not Available | Not Available | Not Available |

[31] Be as specific as possible. For example, if you have data on many access sites but know it is not an exhaustive list, note "more than" before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.
[32] If you know specific numbers, please provide. However, if specific numbers are unknown but you know that the general trend was increasing or decreasing or relatively stable or unchanged since the last assessment, note (increased, decreased, or unchanged. If the trend is completely unknown, simply put "unkwn."

| Public Access Status and Trends | | | |
|---|---|---|---|
| Type of Access | Current number[31] | Changes or Trends Since Last Assessment[32] | Cite data source |
| Number of fishing access points (i.e. piers, jetties) | 560 sites recorded along the ocean | No change | 2011-2015 309 Assessment: Aerial photography on NJDEP GIS |
| Coastal trails/ boardwalks | No. of Trails/ boardwalks<br>• <33 | ↑ | |
| | Miles of Trails/boardwalks<br>• Coastal Heritage Trail: 300 miles, largely highway | No change | http://www.newjerseycoastalheritagetrail.com/ |
| | • Hudson River Waterfront Walkway: 18.5 miles | ↑ 1.14 miles | hudsonriverwaterfront.org |
| | • Hackensack River Greenway: 3.5 mile pedestrian walkway and nature trail | No change | 2011-2015 309 Assessment |
| | • Delaware River Heritage Trail | No change<br>No change | 2011-2015 309 Assessment |
| | • <29 boardwalk/promenades through beachfront municipalities: approximately 47 miles | | 2011-2015 309 Assessment |
| Number of acres parkland/open space | Total sites*<br>Atlantic County: 144,438 acres<br>Bergen County: 2,405 acres<br>Burlington County: 90,453 acres<br>Camden County: 922 acres<br>Cape May County: 70,959 acres<br>Cumberland County: 82,876 acres<br>Essex County: 952 acres<br>Gloucester County: 1,634 acres<br>Hudson County: 2,673 acres<br>Mercer County: 1,602 acres<br>Middlesex County: 10,536 acres<br>Monmouth County: 9,417 acres<br>Ocean County: 129,260 acres<br>Passaic County: 285 acres<br>Salem County: 18,097 acres<br>Somerset County: 6,298 acres<br>Union County: 482 acres | Different methodology used | NJDEP GIS Open Space layer – County and State owned<br><br>*acres provided for all municipalities within each county that are located in the Coastal Zone (within CAFRA area and/or are tidally influenced). |

| Public Access Status and Trends | | | |
|---|---|---|---|
| Type of Access | Current number[31] | Changes or Trends Since Last Assessment[32] | Cite data source |
| | Sites per miles of shoreline<br><br>Unknown | | |
| Percent and total miles of public beaches and water quality monitoring and public closure notice programs | Extensive monitoring program for bathing beaches, consisting of monitoring and bathing beaches near a potential pollution source (e.g. stormwater outfall or coastal lake discharge). 100% of bath bathing beaches (74 stations) monitored. 186 ocean beaches monitored. | No Change | NJDEP Cooperative Coastal Monitoring Program |
| Other (please specify) | | | |

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties.[33] There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,[34] the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,[35] and your state's tourism office.

   New Jersey's coastal waters and adjacent shoreline are a valuable but limited public resource. While it is the 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 coastline, 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. 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, the diversity in access to tidal waters, its proximity to New York and Philadelphia, and its dense population.

   The population within the State's coastal shoreline counties is projected to increase (or decrease) by 0% percent between 2010 and 2020.

   This projection varies between coastal counties with the majority seeing an increase in population. However some are seeing a decrease in population (Camden, Cape May, Monmouth, and Salem). This projection was determined by calculating the percent change in population from the 2000 and

[33] See NOAA's Coastal Population Report: 1970-2020 (Table 5, pg. 9): http://stateofthecoast.noaa.gov/coastal-population-report.pdf
[34] Most states routinely develop "Statewide Comprehensive Outdoor Recreation Plans", or SCROPs, that include an assessment of demand for public recreational opportunities. Although not focused on coastal public access, SCORPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCROPs at www.recpro.org/scorps.
[35] The National Survey on Fishing, Hunting, and Wildlife Associated Recreation produces state-specific reports on fishing, hunting, and wildlife associated recreational use for each state. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes fishing, and some coastal wildlife viewing that may be informative and compares 2011 data to 2006 and 2001 information to understand how usage has changed. See www.census.gov/prod/www/fishing.html.

2010 census data. The census data also provided the 2013 estimated population and the estimated percent change in population between April 1, 2010 and July 1, 2013. The project 2013 population and percent change in population was used to project the population change in each coastal county between 2010 and 2020.

Overall, it is projected that the population change in the state's coastal counties will increase between 2010 and 2020, but at a slightly lower rate than between 2000 and 2010.

See the table below for detailed information.

| County | Population in 2000 | Population in 2010[6] | % change 2000-2010 | 2013 estimate[6] | % change 4/1/10-7/1/13[6] | Projected % change 2010-2020 |
|---|---|---|---|---|---|---|
| Atlantic | 252,552 | 274,549 | 8.7 | 275,862 | 0.5 | 1.7 |
| Bergen | 884,134 | 905,116 | 2.4 | 925,328 | 2.2 | 7.3 |
| Burlington | 423,394 | 448,731 | 6 | 450,838 | 0.5 | 1.7 |
| Camden | 508,932 | 513,666 | 0.9 | 512,854 | -0.2 | -0.7 |
| Cape May | 102,326 | 97,265 | -4.9 | 95,897 | -1.4 | -4.7 |
| Cumberland | 146,438 | 156,898 | 7.1 | 157,332 | 0.3 | 1 |
| Essex | 793,633 | 783,969 | -1.2 | 789,565 | 0.7 | 2.3 |
| Gloucester | 254,673 | 288,288 | 13.2 | 290,265 | 5.7 | 19 |
| Hudson | 608,975 | 634,277 | 4.2 | 660,282 | 4.1 | 13.7 |
| Mercer | 350,761 | 367,511 | 4.8 | 370,414 | 0.8 | 2.7 |
| Middlesex | 750,162 | 809,860 | 8 | 828,919 | 2.4 | 8 |
| Monmouth | 615,289 | 630,380 | 2.5 | 629,672 | -0.1 | -0.3 |
| Ocean | 510,932 | 576,565 | 12.8 | 583,414 | 1.2 | 4 |
| Passaic | 489,049 | 501,616 | 2.6 | 505,672 | 0.8 | 2.7 |
| Salem | 64,285 | 66,083 | 2.8 | 65,166 | -1.4 | -4.7 |
| Somerset | 297,490 | 323,438 | 8.7 | 330,585 | 2.2 | 7.3 |
| Union | 522,541 | 536,499 | 2.7 | 548,256 | 2.2 | 7.3 |
| | | | Avg. 4.8% | | Avg. 1.2% | Avg. 4.0% |

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

Public access deed restrictions. Between October 2011 and September 30, 2014, the NJDEP has imposed deed restrictions for public access on 19 locations. These deed restrictions are requirements

of the NJDEP's regulatory process, including Waterfront Development and CAFRA permits. This list is available for review upon request.

**Management Characterization:**

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

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

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

Statutory, regulatory, policies, or case law

a.) *Regulations*

Regulatory amendments to the coastal rules were adopted on November 5, 2012. The amendments were in response to the November 19, 2008 Appellate Division decision in *Borough of Avalon v NJDEP* No. A-3410-07T3, which limited NJDEP's authority to require additional parking and restrooms from municipalities receiving State shore protection funding in the previous rules which were adopted in December 2007. The amended rules established public access requirement for new development based upon the type of development, for example, residential versus marina development. The regulatory amendments also established the ability for towns to develop Municipal Public Access Plans (MPAPs).

The 2007 rules required public access as a condition of almost all permits (including those for rehabilitation, reconstruction and redevelopment, but excluding homeland security). Access, in almost all cases, had to be provided by a public walkway, of a specified width, parallel to the waterfront, with perpendicular access afforded through the project site. In addition, the rules required that municipalities requesting shore protection monies or Green Acres funding provide an access plan requiring restrooms at one-half mile intervals and sufficient public parking.

*Litigation*
State of New Jersey v. Sea Bright Beach Clubs, No. A-6070-09T3. In this case the New Jersey Superior Court ruled that the public owns all the tidelands in front of the Sea Bright Beach Club and ordered the club to work with NJDEP on developing a plan to accommodate public access, including plans for maintenance, lifeguard protection and signage. The ruling resolves access to the Sea Bright Beach Club that was named in a 2006 lawsuit which argued that 1993 agreements limiting public access to a 15-foot-wide limited use corridor were contrary to law and public policy.

*Program Development*
As a result of the November 5, 2012 amendments to the coastal rules, municipalities now have the option to develop a MPAP that guides public access and is consistent with the vision and needs of the community. When a completed MPAP is deemed by the NJDEP to be consistent with the CZM rules and is adopted into the municipal master plan, all NJDEP-approved development which requires public access along tidal waterways and their shores will be required to provide access consistent with the MPAP. In addition, the rule allows municipalities that adopt a MPAP to establish a municipal Public Access Fund which will receive monetary contributions in lieu of providing on-site access in those cases where it is deemed appropriate. These contributions can then be used by the municipality to enhance public access as outlined in their MPAP.

To help municipalities navigate these rule changes, OCLUP developed a Public Access Planning Program. As part of this program, a new Public Access website was developed.. The website includes information on the Public Trust Doctrine, the rule and guidance, planning tools, flow charts outlining the NJDEP's process for review and approval of MPAPs as well as the public comment process, references to other area plans, contact information including a listserv feature, and MPAPs that are under review or approved by the NJDEP. Prior to Superstorm Sandy, the public access web site contained a public access map that consisted of a static jpeg file that was based on data from a 2005 survey conducted from Sandy Hook to Cape May Point. This map was removed from the website in fall 2012 due to the devastation caused by Superstorm Sandy and the outdated data. Since 2012, staff has been working on development on an interactive map and collecting updated data to be included in an interactive map for the Public Access website. The first phase of the new map is scheduled to be posted online prior to the 2016 beach season and will show public access locations along the Atlantic Ocean. Eventually this map will show public access locations throughout the entire State.

To help guide municipalities through development of MPAPs, OCLUP staff created a MPAP template based on the minimum MPAP requirements set forth in the rules. Staff also offered planning assistance to all 231 eligible municipalities through emails, phone calls, letters, and meetings (when requested). Staff can assist municipalities to the extent needed, from in-person meetings to discuss the rule criteria, to GIS assistance in map development.

In early fall of 2012, in anticipation of the rule amendments, OCLUP provided 50 municipalities with preliminary MPAPs which consisted of the MPAP template filled in with some basic municipal information and two maps showing the municipality's tidal waterways and a preliminary public access location inventory that was created from GIS layers by OCLUP staff. This preliminary MPAP came with the offer of further planning assistance. These 50 municipalities were chosen throughout NJ and encompassed a variety of community types (urban, ocean front, back bay, Delaware River and Bay) throughout each coastal county. This was the

first phase planned to help assist municipalities to complete and submit MPAP for NJDEP approval. This was done to help municipalities understand the new regulations but also to help incentivize development of MPAPs since MPAP development is voluntary. The only regulatory incentive to develop a MPAP is the condition that as of November 5, 2015, the NJDEP shall not authorize a General Permit for Beach and Dune Maintenance to any municipality that does not have a NJDEP-approved MPAP.

Days before the rule amendments were adopted, Superstorm Sandy devastated New Jersey. Over the next year municipalities understandably no longer saw public access as a priority. While municipalities located along the Atlantic Ocean were still recovering from the aftermath of Superstorm Sandy, the majority of public access locations within these municipalities were opened by the 2013 beach season.

After Superstorm Sandy, OCLUP recognized that municipalities were still concentrating on recovery and were not allotting staff time or funding for development of MPAPs. As a result the Municipal Public Access Planning Grant Program was developed and a Request for Proposal (RFP) was published on April 1, 2013. This RFP offered municipalities up to $10,000 to develop a MPAP and up to $15,000 to develop a MPAP which included a coastal hazards assessment through the use of existing NJCMP tools (GTR questionnaire and CCVAMP). The purpose of this grant program was twofold: 1) incentivize development of MPAPs that enhance public access, are consistent with the CZM rules, and consider the resiliency of public access facilities to coastal hazards, and; 2) pilot the MPAP program and provide the NJDEP with information and experience to improve the program for future grant funding cycles. Twenty-seven proposals were received and funding has been provided to 10 municipalities, five of which would conduct a coastal hazards assessment.

Another RFP was published on April 7, 2014, again asking for proposals to develop MPAPs. However, this RFP would provide grant awards up to $15,000 for development of a MPAP and up to $25,000 for development of a MPAP and a CVA Report. The CVA Report would build off the information gained in the GTR and CCVAMP and result in a report that discusses these findings, what actions have already been taken, how these actions have or have not worked, what planning goals, strategies, and priority actions are most urgent, and what alternatives would address current and potential coastal hazards that impact the municipality. Twenty-eight proposals were received and funding has been provided to 10 municipalities, including the six municipalities which make up Long Beach Island. In addition to developing MPAPs, these municipalities will be developing a regional CVA Report.

An additional goal of the Public Access Planning Program is to change the concept that public access only occurs along the Atlantic Ocean. A large portion of New Jersey contains tidal rivers, bays, and tributaries that deserve as much attention as the ocean. The program also anticipates release of a yearly RFP to continue to incentivize municipalities to develop MPAPs and consider the coastal hazards that impact their town.

b.) These changes were 309 driven.

c.) The regulatory changes were intended to satisfy the 2008 Appellate Division decision, limited NJDEP's authority, while ensuring that the public's rights to access tidal waterways and their shores continue to be protected.

Acquisition/enhancement programs

The Blue Acres Program is discussed in detail in the Coastal Hazards Assessment.

3. Indicate if your state or territory has a publically available public access guide. How current is the publication and how frequently it is updated?[36]

| Public Access Guide | Printed | Online | Mobile App |
|---|---|---|---|
| State or territory has? (Y or N) | Y | Y | N |
| Web address (if applicable) | Y | Y | N |
| Date of last update | Guide: 2006 | Website last updated March 21, 2014 | n/a |
| Frequency of update | None scheduled | As needed | n/a |

The public access guide created by a NOAA Coastal Management Fellow 2004-2006, titled "Public Access in New Jersey: The Public Trust Doctrine and Practical Steps to Enhance Public Access" may be found online at http://www.njseagrant.org/njcoastalaccess/waterfront_users/public_trust_doctrine.html.

The NJDEP's Public Access Website: http://www.state.nj.us/dep/cmp/access/

**Enhancement Area Prioritization:**

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

   High _____
   Medium __X__
   Low ____

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

   Public access is a high priority for the State, which is reflected in the significant activity identified in this Assessment. However, the NJDEP has only recently adopted regulatory changes to the CZM rules as a result of the 2011-2015 309 Strategy for Public Access. As such, the NJDEP will continue to work toward the successful implementation of this recent program enhancement, making Public Access an area of medium priority.

[36] Note some states may have regional or local guides in addition to state public access guides. Unless you want to list all local guides as well, there is no need to list additional guides beyond the state access guide. However, you may choose to note that the local guides do exist and may provide additional information that expands upon the state guides.

# Special Area Management Planning

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

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

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

**Resource Characterization:**

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

| Geographic Area | Opportunities for New or Updated Special Area Management Plans |
|---|---|
| | Major conflicts/issues |
| Barnegat Bay | Development/stormwater runoff/water quality/loss of coastal wetlands |
| Raritan Bay | Industrial uses/water quality/public access |
| Delaware River Estuary | Water quality/loss of coastal wetlands; land use development and its impact on wetlands, stormwater, habitat loss; impacts of sea level rise on wetlands, water quality, and shoreline stability. |

Barnegat Bay

The State continued its focus on the Barnegat Bay through the Governors Comprehensive Action Plan. The Action Plan attempts to address the ecological decline of Barnegat Bay through a 10 point action plan. The Action Plan includes the following action items:

1. Close Oyster Creek Nuclear Power Plant;
2. Fund Stormwater Runoff Mitigation Projects;
3. Reduce Nutrient Pollution from Fertilizer;

4. Require Post-Construction Soil Restoration;
5. Acquire Land in the Watershed;
6. Special Area Regional Planning;
7. Adopt More Rigorous Water Quality Standards;
8. Educate the Public;
9. Fill in the Gaps on Research; and
10. Reduce Water Craft Impacts.

To implement *Action Item #6. Special Area Regional Planning* (formerly Special Area Management Planning), NJDEP is assessing environmental and land use planning throughout the Barnegat Bay watershed and working with municipalities to provide guidance and assistance on land use policies. This activity aligns with the Sustainable Communities Task Outcome in the Cumulative and Secondary Impacts Strategy.

The 2014 Update Report on the Comprehensive Plan, and each Action Item, can be found at http://www.nj.gov/dep/barnegatbay/docs/bb_update_2014.pdf.

Raritan Bay

Stakeholder input gathered through the 309 Assessment and Strategy process recommended the use of a Special Area Management Planning process for the Raritan Bay. The Raritan Bay has long been an untapped New Jersey resource; its economic and recreational potential limited by poor water quality. While the health of the Bay has been improving, there are still algae blooms and trash floating in the water, boats on the New Jersey side can still discharge sewage into the Hudson River, the New York Harbor, and the Raritan Bay and primary contact with the water can still pose a health risk. The Raritan Bay once had a thriving commercial shellfish industry. However, today only hard clams are harvested from the Raritan Bay which require expensive depuration due to water quality concerns. A SAMP may be an appropriate tool for the Raritan Bay sometime in the future. In the meantime, New Jersey is implementing the following strategies to improve the health of the Bay:

1. New Jersey has over 193 CSOs that discharge 23 billion gallons of raw sewage annually during heavy rains or heavy snow melts. Most of these CSOs are in North Jersey and flow into the Raritan Bay. The NJDEP has amended its individual CSO permit to require monitoring and reporting on the amount of solids/floatables captured by screens on storm drains. In addition to the new monitoring requirements, permittees are required to submit a LTCP within 36 months of the effective date of the permit, and provide for implementation of the plan immediately following the NJDEP's approval. Completion of the LTCP will ensure that CSOs are minimized or eliminated so that water quality criteria are met at all times. Finally, the CSO permit requires the permittee to consider green infrastructure technologies when evaluating how to decrease or eliminate a CSO, under a LTCP. The NJDEP issued the first round of 25 CSO individual permits in March 2015. These permits became effective July 1, 2015

2. Between 2011 and 2013, the State initiated and completed the removal of three dams on the Raritan River, opening up a 10-mile stretch of the upper and middle river for fish migration and recreation for the first time in over a century. The dam removal project had a significant environmental improvement on the Raritan River, enhancing a valuable habitat for fish, restoring balance to the estuary, and improving overall environmental conditions in the river system. Fish that will benefit from the removal of the dams are American shad, American eel, herring, and striped bass, which once migrated in prodigious numbers through the gravelly shallows of the

Upper Raritan. Better water flow improved the flushing of sediments, reduces nutrient loadings, and improves conditions for the aquatic organisms that are critical to the food web in the river system.

3. On June 16, 2014, the NJDEP proposed the adoption of a TMDL for the Non-Tidal Raritan River Basin, addressing Total Phosphorus, Dissolved Oxygen, pH and Total Suspended Solids Impairments. The document addresses 33 total phosphorus, 3 pH, 1 dissolved oxygen, and 15 total suspended solids impairments in the streams and lakes within the non-tidal Raritan River basin. Upon satisfactory completion of the public review process and upon approval by USEPA, the TMDL document is expected to be adopted by the NJDEP as an amendment to the Lower Raritan/Middlesex, Mercer County, Monmouth County, Northeast, Upper Delaware and Upper Raritan Water Quality Management Plans in accordance with N.J.A.C. 7:15.

Delaware River Estuary

Stakeholder input gathered through the 309 Assessment and Strategy process recommended the use of a Special Area Management Planning process for the Delaware 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. In New Jersey, the land area adjacent to the estuary is governed by multiple local and county agencies, creating multi-jurisdictional conflicts. As one of the least populated shorelines with a high diversity of exceptional natural resources, the region is now experiencing 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; land subsidence; and the migration of alien or invasive species into wetlands. The estuary also has water quality issues due to runoff, development, and industrial discharges.

This area is within the management area of the Delaware Estuary National Estuary Program (Delaware Estuary Program), which adopted a Comprehensive Conservation and Management Plan in September 1996. The Delaware Estuary Program is run by the Partnership for the Delaware Estuary PDE), a non-profit organization established in 1996 to take a leadership role in protecting and enhancing the estuary. For more information on the Delaware Estuary Program visit http://delawareestuary.org/. While it may not be timely for the development of a SAMP in the Delaware Estuary region, it has been recognized that a regional planning approach may ultimately be appropriate for this area.

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

As noted above, a previously proposed SAMP for Barnegat Bay was not developed. However, significant effort has gone into data collection in the Barnegat Bay watershed, an update on which can be found at http://www.nj.gov/dep/barnegatbay/docs/bb_update_2014.pdf.

**Management Characterization:**

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

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

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

    a.) New Jersey's 309 Assessment and Strategy for 2011-2015 originally proposed the development of a SAMP for the Barnegat Bay. The SAMP strategy was intended to be a coordinated approach to address future permitting and policy decisions by producing a framework of standards and conditions specific to the goals of restoring the health and vitality of the Barnegat Bay. However, in the aftermath of Superstorm Sandy, State priorities changed and the strategy for Barnegat Bay shifted away from the development of a SAMP.

    b.) This change was not 309 driven.

    c.) Moving forward, the State will continue to address the items in the Governor's Action Plan.

**Enhancement Area Prioritization:**

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

    **High** _____
    **Medium** _____
    **Low** __X__

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

    The NJCMP does not believe that a SAMP is appropriate for the identified waterbodies at this time. However, the NJDEP is utilizing various tools and implementing numerous rules and policies that will benefit all of the waterbodies throughout the coastal zone.

# Wetlands

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

*Note: For the purposes of the Wetlands Assessment, wetlands are "those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." [33 CFR 328.3(b)]. See also pg. 17 of the CZMA Performance Measurement Guidance[37] for a more in-depth discussion of what should be considered a wetland.*

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

**Resource Characterization:**

1. Using provided reports from NOAA's Land Cover Atlas[38] or high-resolution C-CAP data[39] (Pacific and Caribbean Islands only), please indicate the extent, status, and trends of wetlands in the state's coastal counties. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available.

   The data below are NJDEP's latest Land Use/Land Cover data for the years 2002 and 2012. The NJCMP believes that these data sets are more accurate than the NOAA data. The acreage figures cited are based upon a comparison of Land Use /Land Cover types compiled by NJDEP in 2007 and 2012 using GIS mapping. Due to changes in photo interpretation mapping protocols, the time of the baseline photo-imagery, tidal forces, and land use practices, some areas mapped in 2007 as falling within a cover type have been remapped as a different cover type. Additionally it is noted that the NJDEP's wetland mapping is used for guidance and does not reflect jurisdictionally verified wetland boundaries. As a result, the changes noted in the extent of wetlands by this mapping may not accurately reflect changes enabled by permitted activities, which are based upon onsite wetland delineation determinations.

| **Coastal Wetlands Status and Trends based from NJDEP Land Use Land Cover Data 1995, 2007, 2012** | | |
|---|---|---|
| Current state of wetlands in 2012 (acres) | 857,672 | |
| Percent net change in total wetlands (% gained or lost) | from1995-2012 | from 2007-2012 |
| | -2.93% | -0.29% |
| Percent net change in freshwater (palustrine wetlands (% gained or lost) | from 1995-2012 | from 2007-2012 |
| | -3.36% | -0.31% |

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

| | | |
|---|---|---|
| Percent net change in saltwater (estuarine) wetlands (% gained or lost) | from 1995-2012 | from 2007-2012 |
| | 0.43% | 0.12% |

**Source: NJ DEP Land Use/Land Cover data

| **How Wetlands Are Changing** | | |
|---|---|---|
| **Land Cover Type** | **Area of Wetlands Transformed to Another Type of Land Cover between 1995-2012 (Sq. Miles)** | **Area of Wetlands Transformed to Another Type of Land Cover between 2007-2012 (Sq. Miles)** |
| Development | 32.13 | 2.58 |
| Agriculture | 1.40 | 0.08 |
| Barren Land | 4.29 | 2.17 |
| Water | 15.13 | 2.89 |

**Source: NJ DEP Land Use/Land Cover data

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

Shoreline Erosion

Using data from NOAA's State of the Coast "Coastal Vulnerability Index", 42% of the New Jersey coastline is highly vulnerable to shoreline erosion.

Sea Level Rise

Using data from NOAA's State of the Coast "Coastal Vulnerability Index", 98% of the New Jersey coastline is moderate to highly vulnerable to sea level rise.

**Management Characterization:**

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

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

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

New Jersey Wetland Program Plan 2014-2018

a.) In January 2014, the USEPA approved the NJDEP's December 2013 "New Jersey Wetland Program Plan, 2014-2018" that addresses five core elements, 1) Monitoring and Assessment; 2) Regulation; 3) Voluntary Wetland Restoration, Creation, Enhancement and Protection and Improved Coastal Shoreline Resiliency; 4) Water Quality Standards for Wetlands; and 5) Public Outreach and Education. In accordance with USEPA guidelines, the plan is structured around the five core elements, associated actions and activities which are tailored to New Jersey's specific objectives and needs. This guidance document establishes a framework to track programmatic progress by outlining goals and actions within a five year schedule.

b.) This change was not 309 driven.

c.) The goal of this plan is to improve and protect existing significant ecosystem services and functions provided by wetlands such as flood control, shoreline stabilization, coastal storm surge protection, water purification, nutrient recycling, sediment retention, providing habitat for plants and wildlife, as well as reservoirs of biological diversity supporting food webs, while providing meaningful recreational opportunities, sustainable economic benefits and opportunities for environmental education. Detailed information is provided in the Program Plan, which is available on USEPA's website at: http://water.epa.gov/type/wetlands/upload/njdep-wpp_2014-2018.pdf.

Wetlands Mitigation

a.) State and federal regulations require mitigation to compensate for unavoidable wetland impacts. In addition to onsite and offsite mitigation options, the New Jersey allows the use of mitigation banks or a contribution to an In-Lieu Fee (ILF) to satisfy mitigation requirements.

*Mitigation Banks*
A mitigation bank is a site in which wetlands and/or other aquatic resources such as riparian zones and sometimes uplands are restored, created, enhanced, or preserved by a mitigation bank operator in advance of any specific need for compensatory mitigation. Private companies create mitigation banks because the banker receives credits for the mitigation project which can then be sold to public or private entities to fulfill their mitigation requirements. As of 2015, the State of New Jersey has 20 approved mitigation banks and of those, 9 provide mitigation in the coastal zone. Each mitigation bank is assigned a "service area," or area in which it can sell mitigation credits. The service area is a geographic area containing environmental conditions and wetland types that are ecologically similar to those being provided at the mitigation bank so that applicants purchasing credits from a bank are replacing in kind the wetlands being lost due to permitting. Mitigation credits are the "currency" used by mitigation banks. Each bank is assigned a unique number of credits depending upon the

activities undertaken to create, restore, enhance or preserve wetlands in the mitigation bank site.

*The Mitigation Fund (In-Lieu Fee)*
When all other types of mitigation are unavailable, the State provides the option for applicants to make a monetary contribution to the State's Mitigation Fund, which is governed by the Wetlands Mitigation Council. The Mitigation Fund is a repository for monetary contributions, also known as In-Lieu Fees, made for mitigation purposes, established at N.J.S.A 13:9B-14a. On December 8, 2014, the Council adopted the document entitled "State of New Jersey In-Lieu Fee Mitigation Program Draft Instrument." The USEPA on August 6, 2015, found New Jersey's freshwater wetlands program governing monetary contributions as described in the In-Lieu Fee instrument, consistent with the federal mitigation rule 40 C.F.R Part 230. The ILF Instrument sets forth guidelines and responsibilities for the establishment, use, operation, protection, monitoring, and maintenance of the ILF Program to assure the work associated with the ILF Program produces the necessary mitigation credits to compensate for unavoidable impacts to waters of the United States, including wetlands, that result from activities authorized under New Jersey Freshwater Wetlands Protection Act, N.J.S.A.13:9B, and the Freshwater Wetlands Protection Act Rules , N.J.A.C. 7:7A.

b.) This change was not 309 driven.

c.) The ILF Program will accomplish its objectives by creating, restoring, enhancing, and preserving in perpetuity freshwater wetlands throughout the ILF Program service area in New Jersey.

<u>Living Shorelines Strategic Direction</u>

a.) Superstorm Sandy emphasized the value and resiliency of natural areas in mitigating storm impacts and spurred new urgency in developing and implementing living shoreline protections in New Jersey. However, while the living shorelines concept is well established and accepted, the design and implementation, as well as the long term effectiveness and impacts are highly dependent on site-specific conditions and resources present. For that reason the living shoreline concept and methodologies must be more fully developed, piloted, and monitored to deal effectively with the specific, local conditions throughout New Jersey's diverse coastal area.

The NJCMP has developed a Living Shoreline Strategic Direction for the development of living shoreline opportunities within New Jersey's coastal zone. The goal of the Strategic Direction is to develop, encourage, and effectively implement living shorelines and related green infrastructure methodologies and policies tailored to New Jersey's coastal environment.

b.) These changes were 309 driven. New Jersey's 309 Assessment and Strategy for 2011 -2015 included Wetlands as a high priority area and a strategy work plan to engage partners and stakeholders, assess living shoreline management projects, develop and adopt modifications to enforceable policies, plans and actions to support implementation of living shoreline strategies, and complete guidelines for living shoreline use. NJCMP Section 309-funded activities have included these tasks which have substantially been accomplished.

c.) The methodologies and policies developed are intended to:

1. Address excessive shoreline erosion and sea level rise causing the loss of beneficial natural areas and related habitat, and
2. Balance the use, and adverse impacts, of traditional "hard" structural-only stabilization in order to promote living shorelines which protect and/or enhance natural systems that provide resilient ecological and economic protection/mitigation.

There will likely be an increased use of living shorelines in New Jersey because of the work completed under the 2011 -2015 309 Wetlands strategy. The Strategic Direction provided a platform for many activities that followed including the grant projects, guidance materials, and regulatory amendments described in the following significant management actions.

Grant Initiatives

a.) The NJCMP has received and partnered on various grants to address the data and processes needed to advance use of ecologically based strategies for community resilience. These grants are being coordinated to guide the development of a New Jersey living shoreline program in the areas of expanded data gathering, mapping, assessment, planning, implementation, and monitoring of coastal wetland conditions and living shoreline mitigation strategies. The NJCMP is working closely with many internal and external partners to effectively leverage efforts to develop a network to promote, construct, and monitor ecologically-based mitigation projects, build a sound database of techniques, and provide clear guidance for their use as applicable in the New Jersey coastal zone. Such projects include:

*USEPA Wetlands Program Development Grant*
In October of 2014, the OCLUP was awarded an USEPA grant to create a New Jersey Living Shorelines Program to augment the NJCMP's work under Section 309 and facilitate the design and implementation of appropriate living shorelines mitigation strategies along the New Jersey coastline. Deliverables for this grant include the identification of living shorelines projects and opportunities, development of a website which will make New Jersey living shoreline information publicly available, and development of additional recommendations for regulatory changes beyond those adopted in 2013 using Section 309 resources. Several pilot projects are to be used to inform opportunities and impediments to living shorelines implementation. The grant period runs from January 1, 2015 to December 31, 2016.

*Living Shorelines Engineering Manual*
Making use of Section 309 funds, the NJCMP contracted with the Stevens Institute of Technology, through the New Jersey Sea Grant Consortium, to develop engineering guidelines for the implementation of living shorelines projects permitted through the regulatory changes described below. In addition, Stevens Institute of Technology was engaged to assess the New Jersey coastline from the Raritan Bay to the Hudson River to determine appropriate, ecologically-based green infrastructure/living shorelines locations and design techniques to supplement shoreline assessments being conducted under the The Nature Conservancy of New Jersey grant described below. Under the contract, Stevens Institute of Technology:

1. Identified and filled gaps in the existing living shoreline design literature;
2. Developed engineering design guidance in support of the living shorelines general permit;
3. Developed conceptual designs applying the engineering guidance, for a demonstration project at Berkley Island County Park in Ocean County, and
4. Developed education and outreach materials for the appropriate stakeholders.

*The Nature Conservancy Resilient Coastlines Initiative*
In the early spring 2014, The Nature Conservancy (TNC) of New Jersey, a partner of the NJCMP, was the recipient of a 2-year NOAA CRest grant, "The Resilient Coastlines Initiative", to complete the following:

1. Develop an online "Restoration Explorer" tool for New Jersey with Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA) and
2. Develop and monitor ecologically based/living shorelines pilot projects within coastal and bayshore catchment areas, from Sandy Hook in Monmouth County to Salem County on the Delaware River estuary.

With the assistance of numerous partners, the Resilient Coastlines Initiative (RCI) is developing mitigation guidance on inland conditions, including marsh and flood plain restoration. The RCI is also identifying appropriate sites within the catchment areas to develop and monitor ecologically-based mitigation projects using green infrastructure and social criteria. They intend to build upon the USACE December 2014 release of metrics for ecological solutions, and develop New Jersey based metrics for project effectiveness and the ecological, economic, and social benefits of natural infrastructure projects.

*Building Ecological Solutions to Coastal Community Hazards*
The OCLUP was awarded a Hurricane Sandy Coastal Resiliency Competitive Grant funded by the U.S. Department of the Interior and administered by National Fish and Wildlife Foundation for "Building Ecological Solutions to Coastal Community Hazards"; this award will develop and fund ecologically-based natural hazard mitigation strategies. Under this grant, OCLUP is working to develop a local government guide to ecologically-based natural hazard mitigation strategies, provide outreach and education on the local application of the mitigation strategies, provide direct assistance to 48 of New Jersey's 239 coastal municipalities, create pilot projects for replication by others, develop a coastal citizen monitoring program, develop school programs to engage youth in understanding coastal hazards and monitoring, and to circulate the results locally, regionally, and nationally. Project partners include the National Wildlife Foundation, Sustainable Jersey, New Jersey Sea Grant Consortium, Stevens Institute of Technology, Barnegat Bay Partnership, The Partnership for the Delaware Estuary, and the following communities: Atlantic City, Brigantine, Downe Township, Lower Township, Margate, Secaucus, Somers Point, Spring Lake, Upper Township, and Cape May County. The grant period runs from March 1, 2015 to March 1, 2017.

b.) Not all of these changes were 309 driven but are an outcome of policy changes accomplished under the 2011-2015 Wetlands 309 Strategy as described above.

c.) These projects have grant funding provided by multiple federal agencies focused on enabling living shorelines and other nature based approaches. This funding will enable use through pilots of more ecologically based hazard mitigation strategies and represent a policy shift away from more hardened shorelines techniques.

<u>Regulatory amendments</u>

a.) In response to Superstorm Sandy, the NJDEP adopted regulatory changes on an emergency basis and became effective upon acceptance for filing by the New Jersey Office of Administrative Law. Concurrently, the provisions of the emergency adoption were proposed

for readoption pursuant to the rulemaking requirements of the Administrative Procedure Act, and became effective on June 17, 2013 upon acceptance for filing by the New Jersey Office of Administrative Law. These amendments were incorporated into New Jersey's federally approved NJCMP on March 17, 2014.

b.) These changes were not 309 driven.

c.) Characterize the outcomes or likely future outcomes of the changes. The methodologies and policies developed are intended to:

1. Address excessive shoreline erosion and sea level rise causing the loss of beneficial natural areas and related habitat, and
2. Balance the use, and adverse impacts, of traditional "hard" structural-only stabilization in order to promote living shorelines which protect and/or enhance natural systems that provide resilient ecological and economic protection/mitigation.

There will likely be an increased use of living shorelines in New Jersey because of the work completed under the 2011 -2015 Wetlands 309 strategy including additional regulatory changes.

Monitoring Wetland Conditions

*Mid-Atlantic Coastal Wetlands Assessment*

a.) The Mid-Atlantic Coastal Wetlands Assessment (MACWA) program has been collecting data for years in a multi-tiered regional approach that has science-based and tested protocols associated with each tier. The regional approach allows for local application and the ability to investigate, compare and contrast local wetland conditions.

MACWA (first implemented in New Jersey in 2010) is the first wetland program to study tidal wetland health in our region, and is a partnership of two National Estuary Programs, federal and state agencies, and academic institutions. MACWA was spearheaded by the Partnership for the Delaware Estuary. Other supporters and participants in the broader wetland assessment program include the Academy of Natural Sciences of Drexel University, USEPA Region 2, the Pennsylvania Coastal Zone Management Program, NJDEP 319 program, NJCMP through its federal NOAA funding, the Delaware Department of Natural Resources and Environmental Control, Rutgers Haskin Shellfish Research Laboratory, and the many members of the MACWA workgroup.

The tiered MACWA design provides rigorous and comparable data across the Mid-Atlantic region with monitoring and research studies. The four tiers include:

Tier 1. Landscape census surveys of the extent and condition of tidal wetlands
Tier 2. On the ground random sampling across the study region(s) to assess condition and ensure validity of Tier 1 studies. This tier includes Rapid Assessment and MidTRAM methods.
Tier 3. Research. Intensive studies to examine the relationships among condition, function, and stressor impacts in order to resolve unanswered questions.
Tier 4. Intensive monitoring of the condition and function at fixed stations to study changes over time achieved through Site Specific Intensive Monitoring. New Jersey has 10 Site Specific Intensive Monitoring stations.

Implementation of the MACWA Program has been identified as a priority action in the USEPA approved New Jersey 5-Year Wetlands Conservation Strategy administered by the NJDEP. It is the NJDEP's goal to have a consistent and comprehensive monitoring approach including core metrics for coastal wetlands that will inform restoration, resilient and sustainable conservation and management practices.

b.) This activity is an ongoing and not a direct result of the 309 strategy but is related to increased focus on wetlands and shorelines in the coastal zone based on the Wetlands 2011-2015 309 strategy.

c.) This multi-tiered monitoring of wetlands resources has a likely chance of continuing given multiple agency support and participation.

*Water Quality Data Exchange*

a.) Water Quality Data Exchange System (WQDE) was established as the NJDEP's comprehensive data system designed to receive, integrate, and disseminate New Jersey ambient water quality data generated from multiple sources. This system is intended to make it easier for the NJDEP, USEPA, and regional and local water monitoring entities to submit and access New Jersey water quality monitoring data over the Internet. In addition to new data that is entered into WQDE, this system will also provide access to New Jersey water quality data stored in USEPA (STORET) and USGS (NWIS) data systems. WQDE has been used primarily for the development of New Jersey's Integrated Water Quality Monitoring and Assessment Report and complements NJDEP's Volunteer Monitoring Data System, which was designed specifically as a repository for volunteer-collected water resource data. Recently, NJDEP's Office of Science worked to include research findings from State and federal (EPA 319) sponsored research projects for the Barnegat Bay and Delaware Estuaries into the WQDE. The research findings of these projects go beyond the ambient water quality network and include other chemical and physical parameters, particularly those pertaining to wetlands.

b.) This activity is not 309 driven.

c.) This activity has a likelihood of success given the level of federal and State support.

*Mapping of Wetland Resources*

a.) Finer scale wetland mapping efforts by the NJDEP Natural and Historic Resources Program began in 2014. New Jersey participated in the first National Aquatic Resource Surveys (NARS) for Wetlands in the 2011 National Wetland Condition Assessment (NWCA). The NJDEP's Natural and Historic Resources program is leading the effort to conduct statewide wetland condition assessments, and is supported by the NJDEP's Water Resources Management program. Wetland assessment tools developed for the NWCA using the EPA 3-tiered multi-scale approach (landscape remote sensing, rapid field, and intensive field assessment) are currently being used in conjunction with an Ecological Integrity Assessment Protocol to assess the condition of freshwater and tidal wetlands statewide. Results from these studies have been, and will continue to be, presented at New Jersey Water Monitoring Council meetings and NJDEP/Council Water Monitoring conferences. Wetland habitat monitoring is also occurring as part of USFWS Section 6 grant projects to monitor and assess Federally-designated endangered, threatened, and candidate plant and animal species that depend upon wetlands. Inter- and intra-agency collaboration between State and Federal partnerships has strengthened this wetland monitoring and assessment work.

b.) This activity is not 309 driven.

c.) This activity has a likelihood of success given the level of federal and State support.

**Enhancement Area Prioritization:**

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

| | |
|---|---|
| **High** | __X__ |
| **Medium** | _____ |
| **Low** | _____ |

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

   As summarized above, data from NOAA's State of the Coast "Coastal Vulnerability Index", indicated that 42% of the New Jersey coastline is highly vulnerable to shoreline erosion and 98% of the NJ coastline is moderate to highly vulnerable to sea level rise. Superstorm Sandy and other coastal storms and hazards have severely impacted New Jersey's tidal wetlands, negatively impacting habitat for aquatic flora and fauna and reducing community resiliency and shown the very real vulnerability of our shorelines and coastal wetlands.

   New Jersey has taken steps as outlined above to permit, pilot, monitor, and improve the use of ecologically based hazard mitigation strategies for their intrinsic and community resiliency value. The currently funded projects, regulatory changes and wetland monitoring are initial steps toward understanding and expanding the use of ecologically based mitigation strategies in New Jersey through the NJCMP. However, additional work with multiple stakeholders including nonprofits, professionals, regulators, local governments and property owners is needed. Additional NJCMP program changes are anticipated as knowledge on the use of these strategies increases.

   Stakeholders in large measure, internal and external to the NJDEP, support the increase in use of ecologically-based mitigation strategies including living shorelines. Please see the summary of stakeholder process and input section of this document.

## Phase II (In-Depth) Assessments

For any enhancement areas ranked as a high priority after the Phase I Assessment, the NJCMP conducted a Phase II (in-depth) Assessment using the appropriate Phase II Assessment templates provided by NOAA to further explore potential problems, opportunities for improvement, and specific needs.

After completing the Phase II Assessment questions, the NJCMP identified, in consultation with NOAA, which enhancement areas it will develop a strategy for. There is no requirement to develop a strategy for every enhancement area that was designated as a high priority.

The NJCMP determined through the Phase I Assessments that Phase II Assessments would be completed for the Aquaculture, Coastal Hazards, Cumulative and Secondary Impacts, Ocean Resources, and Wetlands enhancement areas. The Phase II Assessments for each of these enhancement areas follow.

# Aquaculture

## PHASE II (IN-DEPTH) ASSESSMENT

**In-Depth Resource Characterization:**

**Purpose:** To determine key problems and opportunities for facilitating the siting of aquaculture facilities in the coastal zone.

1. What are the three most significant existing or emerging challenges to facilitating the siting of aquaculture facilities within the coastal zone? Indicate the geographic scope of the challenge, i.e., is it prevalent throughout the coastal zone or are specific areas most threatened? Challenges can be conflicting uses; coastal resource impacts; coordinating regulatory processes or review; insufficient data; natural disasters; or other (please specify). When selecting significant challenges, also consider how climate change may exacerbate each challenge.

| | **Challenges** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Challenge 1 | Streamline Regulatory Process | Coastal Zone |
| Challenge 2 | Threatened and Endangered Species Restrictions | Coastal Zone |
| Challenge 3 | Water Quality Issues | Coastal Zone |

2. Briefly explain why these are currently the most significant challenges to facilitating the siting of aquaculture facilities in the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

   Regulations

   In New Jersey, various State agencies oversee the aquaculture industry, including the NJDEP, the NJDA, and the NJDOH, in addition to the USACE, and other non-governmental entities/authorities. The siting of a new aquaculture facility must be reviewed by various offices within the NJDEP, including the DLUR, the Bureau of Shellfisheries, the Bureau of Marine Water Monitoring, and the Bureau of Tidelands Management. Consequently, growers want to see the permitting process within NJDEP streamlined through the development of a one-stop permitting office.

   As outlined in the Phase I Assessment, the NJDA is an agency member involved in SAWG and oversees the AAC which published the Aquaculture Development Plan in 2011. Going forward, the NJDEP will continue to coordinate with the NJDA as part of the SAWG and to update of the Aquaculture Development Plan.

   As discussed in the Phase I Assessment, the coastal rules were amended in 2013 to streamline the land use permitting process as it pertains to shellfish aquaculture. Also discussed in the Phase I

Assessment, the Tidelands Resource Council developed an aquaculture license policy to be implemented by the NJDEP's Bureau of Tidelands Management. The policy's efficacy is currently being evaluated and updates will be made accordingly.

Further, the NJDEP Bureau of Shellfisheries is in the process of revising and updating the shellfish leasing regulations in consultation with the Atlantic Coast and Delaware Bay Shellfisheries Councils, and NJDA. The Bureau of Shellfisheries and the Atlantic Coast Shellfisheries Council are also in the process of drafting a Shellfish Aquaculture Leasing Policy document.

Threatened and Endangered Species Restrictions

As discussed in the Phase I Assessment, the USFWS recently designated the Red Knot (Calidris canutus rufa) as threatened under the ESA which allows Federal and State agencies to implement strong protection measures to ensure the persistence of the subspecies. Pursuant to Section 7 of the ESA, the USFWS has proposed conservation measures to avoid adverse effects to Red Knots from shellfish aquaculture activities on the New Jersey side of the Delaware Bay. Such actions, like the seasonal closure of all shorelines where Red Knots forage on horseshoe crab eggs, could severely impact the profitability, and ultimately perhaps the viability, of commercial oyster production. While both the USFWS and the oyster aquaculture industry are open to compromise, additional research is needed to assess and potentially develop approaches to minimize impacts of oyster aquaculture activities on red knot foraging rates.

Preliminary investigations led by Dr. Joanna Burger, Rutgers University, on whether oyster aquaculture could be used as wave attenuation structures to enhance foraging conditions for Red Knot suggests that there may be cause for concern with potential impacts of oyster aquaculture activities on Red Knot foraging. More intensive and extensive studies are needed to better understand all aspects of the potential impacts of oyster aquaculture on Red Knots and other shorebirds. As discussed in the Phase I Assessment, the NJDEP Endangered and Nongame Species Program is funding a study to research the effects of oyster aquaculture on foraging shorebirds on the Delaware Bay which commenced in spring of 2015.

Water Quality Issues

The ability to site new aquaculture facilities is limited by health concerns related to water quality issues. The NJDEP is evaluating its Shellfish Growing Water Classification rules, N.J.A.C. 7:12, to ensure conformance and compliance with the FDA National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish Model Ordinance, specifically the creation of new restoration permits.

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

| Emerging Issue | Information Needed |
|---|---|
| The USFWS recently designated the Red Knot (*Calidris canutus rufa*) as threatened under the ESA which allows Federal and State agencies to implement strong protection measures to ensure the persistence of the subspecies. | Research on the potential impacts of aquaculture, particularly shellfish aquaculture, on shorebird habitat and other coastal resources. |

**In-Depth Management Characterization:**

**Purpose**: To determine the effectiveness of management efforts to address identified problems related to the aquaculture enhancement objective.

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

| Management Category | Employed by the State (Y or N) | CMP Provides Assistance to Locals that Employ (Y or N) | Significant Changes Since Last Assessment (Y or N) |
|---|---|---|---|
| Aquaculture research, assessment, monitoring | Y | N | Y |
| Aquaculture GIS mapping/database | Y | N | N |
| Aquaculture technical assistance, education, and outreach | Y | N | Y |

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

    <u>Aquaculture Research, Assessment and Monitoring</u>

    a.) The federal listing of the Red Knot as a threatened species has resulted in potential user conflicts in all of the Delaware Bay region's designated ADZs, primarily in areas where non-traditional aquaculture systems are utilized. The Delaware Bay region is a globally significant migratory bird stopover and therefore, the designation has and will continue to prompt a close examination of the impacts of non-traditional shellfish aquaculture systems on shorebird habitat.

    b.) These changes were not 309 driven.

    c.) In an effort to resolve this situation, the NJDEP's Bureau of Shellfisheries and Endangered and Nongame Species Program is funding a research study that began in spring 2015. The study is designed to research the effects of oyster aquaculture on foraging shorebirds in the Delaware Bay region. The results of the study will inform the development of appropriate and effective protective measures for Red Knots, such as the establishment of new designated use areas. The team of academics and extension agents, representing both conservation and aquaculture interests, will facilitate the exchange of information on the oyster aquaculture industry and the modifications to current practices that will ensure the persistence and growth of a key industry.

Aquaculture technical assistance, education, and outreach

a.) To better coordinate state and federal regulatory efforts related to the coordination of shellfish aquaculture, the Shellfish Aquaculture Working Group (SAWG) was formed by the NJDEP Bureau of Shellfisheries. Representatives from NJDEP's Bureau of Shellfisheries, Bureau of Marine Water Monitoring, DLUR, and the USACE, FDA, NJDA, NJDOH joined to determine ways to better understand respective roles and how to better communicate with industry. The SAWG met on eleven occasions and hosted an invitation-only stakeholder meeting in June 2014. Stakeholders were asked to provide feedback on perceived current and historical barriers to the advancement of the industry. This information helped inform New Jersey's regulatory process and opened a constructive dialogue. In addition, the SAWG made significant progress with a public workshop meeting between the SAWG agencies and stakeholders in October 2014. The goal of the workshop was to provide an overview of the regulatory scope of authority of each agency, as well as to address pertinent questions from the participants regarding the agencies' responsibilities and how they are currently regulated.

b.) These changes were not 309 driven.

c.) The SAWG brought together federal and state agency representatives that had previously been working in a more independent manner to regulate the same industry. Through concerted discussions, the regulatory aspects of shellfish aquaculture in New Jersey now have greater transparency and there is a more open dialog both between the agencies and States' shellfish growers. The SAWG spent time identifying appropriate areas where streamlining regulatory measures or processes would better serve the shellfish growers of the State. In the long run, it is the goal of the SAWG to further consolidate the permitting process for shellfish aquaculture and update and revise New Jersey's regulations and statutes to better reflect the needs of the shellfish aquaculture industry.

**Identification of Priorities**

Considering changes in aquaculture activities, the management of these activities since the last assessment, and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve the effectiveness of its management effort to better respond to the most significant aquaculture challenges.

*Management Priority 1*
Continued coordination between the aquaculture industry and government agencies through the SAWG, the New Jersey Shellfisheries Council, and the AAC to identify opportunities to streamline the permitting process and implement appropriate regulatory amendments that facilitate the expansion of the aquaculture industry while protecting coastal resources and avoiding significant user group and resource conflicts.

*Management Priority 2*
Updated data and spatial mapping of coastal resources would be helpful to provide an updated baseline of special areas.

*Management Priority 3*
Based in part on the research and mapping, identification and establishment of new ADZs may be appropriate.

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

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Research | Y | Additional funding sources to research and assess the impacts of the aquaculture industry on coastal resources. |
| Mapping/GIS | Y | Updated baseline special area mapping is needed to identify areas that require particular regulatory protections. |
| Data and information management | N | |
| Training/Capacity building | Y | All NJDEP programs that regulate the shellfish aquaculture industry need training on the recent rule amendments and new guidance documents and policies that are being developed.<br><br>NJDEP has discussed the concept of a revolving loan or mini-grant program to support growers and to facilitate the expansion of the shellfish aquaculture industry, where appropriate |
| Decision-support tools | N | |
| Communication and outreach | N | |

**Enhancement Area Strategy Development:**

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

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

   New Jersey's shellfish aquaculture industry is rapidly evolving and the regulations need to reflect these changes in order to allow for the expansion of the industry while continuing to protect coastal resources. The SAWG, the Atlantic Coast and Delaware Bay Shellfisheries Councils, and the AAC will assess emerging aquaculture needs while continuing to support the existing industry and recommend regulatory amendments to facilitate the expansion of the industry in New Jersey. The NJCMP has developed a strategy that augments efforts by the working group and advisory council. More specifically, the NJCMP will work toward updating baseline special area mapping concentrating on special waters and special water's edge areas, and develop regulatory amendments to the CZM rules that reflect the changing nature of the aquaculture industry while protecting coastal resources.

# Coastal Hazards

## PHASE II (IN-DEPTH) ASSESSMENT

### In-Depth Resource Characterization:

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

1a. **Flooding In-depth** (for all states besides territories): Using data from *NOAA's State of the Coast* "Population in the Floodplain" viewer[40] and summarized by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,[41] indicate how many people at potentially elevated risk were located within the state's coastal floodplain as of 2010. These data only reflect two types of vulnerable populations. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available.

| 2010 Populations in Coastal Counties at Potentially Elevated Risk to Coastal Flooding | | | | |
|---|---|---|---|---|
| | Under 5 and Over 65 years old | | In Poverty | |
| | # of people | % Under 5/ Over 65 | # of people | % in Poverty |
| Inside Floodplain | 165,395 | 20.5% | 76,866 | 9.5% |
| Outside Floodplain | 1,224,990 | 19.7% | 576,340 | 9.3% |

1b. **Flooding In-depth** (for all states besides territories): Using summary data provided for critical facilities, derived from FEMA's HAZUS[42] and displayed by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,[43] indicate how many different establishments (businesses or employers) and critical facilities are located in the FEMA floodplain. You can provide more information or use graphs or other visuals to help illustrate or replace the table entirely if better information is available.

| Critical Facilities in the FEMA Floodplain[44] | | | | | | |
|---|---|---|---|---|---|---|
| | Schools | Police Stations | Fire Stations | Emergency Centers | Medical Facilities | Communication Towers |
| Inside Floodplain | 2,535 | 1,035 | 1,155 | 270 | 135 | 480 |

[40] http://stateofthecoast.noaa.gov/pop100yr/welcome.html
[41] http://www.csc.noaa.gov/digitalcoast/tools/snapshots
[42] http://www.fema.gov/hazus; can also download data from NOAA STICS http://www.csc.noaa.gov/digitalcoast/data/stics. Summary data on critical facilities for each coastal state is available on the ftp site.
[43] http://www.csc.noaa.gov/digitalcoast/tools/snapshots

| | | | | | | |
|---|---|---|---|---|---|---|
| Coastal Counties (aggregate) | 169 | 69 | 77 | 18 | 9 | 32 |

2. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards[44] within the coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone or are specific areas most at risk?

| | **Type of Hazard** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Hazard 1 | Coastal storms (including storm surge) | Throughout the coastal zone |
| Hazard 2 | Shoreline erosion | Throughout the coastal zone |
| Hazard 3 | Flooding/ Sea level change | Throughout the coastal zone |

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

Many parts of New Jersey' densely populated coast are highly vulnerable to the effects of flooding, storm surge, shoreline erosion, sea level rise, and coastal storms. Historic experience and vulnerability to these hazards is documented within the HMP and each county's Hazard Mitigation Plan.

Coastal Storms and Storm Surge

Coastal storms are an intricate combination of events that impact a coastal area. A coastal storm can occur any time of the year and at varying levels of severity. One of the greatest threats from a coastal storm is coastal flooding caused by storm surge. Coastal flooding is the inundation of land areas along the oceanic coast and estuarine shoreline by seawaters over and above normal tidal action.

Storm surges inundate coastal floodplains by dune overwash, tidal elevation rise in inland bays and harbors, and backwater flooding through coastal river mouths. Strong winds can increase tide levels and water surface elevations. Storm systems generate large waves that run up and flood coastal beaches. The combined effects create storm surges that affect the beach, dunes, and adjacent low-lying floodplains. Shallow, offshore depths can cause storm-driven waves and tides to pile up against the shoreline and inside bays. It is estimated that 90% of deaths and most property damage near the coast during hurricanes are caused by storm surge. Storm surge occurs when coastal waters are pushed toward shore and held above mean sea level. Depending on storm size, characteristics and distance from the shoreline, the storm can raise the sea level along 50 or more miles of coastline by 20 or more feet. The higher sea level, along with the wind-enhanced hammering of waves, acts as a giant bulldozer sweeping everything in its path. Additionally, still-water damage to inundated structures and facilities is exacerbated by the harmful effects of saltwater. Structures, once salted, will

[44] See list of coastal hazards at the beginning of this assessment template.

remain more susceptible to moisture, leading to mildewing and corrosion of the structure and all contents that came in contact with the saltwater (NJOEM 2011).

In the last 30 years, FEMA declared seven tropical cyclone disasters or emergencies due to hurricanes, tropical storms, and remnants of tropical storms, including Hurricane Gloria (1985), Hurricane Floyd (1999), Tropical Depression Ivan (2004), severe storms and flooding associated with Tropical Depression Ida and a Nor'easter (2009), Hurricane Irene (2011), remnants of Tropical Storm Lee (2011), and Hurricane Sandy (2012). The NOAA Hurricane Research Division has projected the probability that a tropical storm or hurricane (of any intensity) will affect New Jersey as 6% to 30% chance each year, and the likelihood of a Category 3, 4, or 5 hurricane at less than a 1% chance each year.

Virtually New Jersey's entire coastline is at risk from coastal storms. New Jersey's HMP states that approximately 4.3% (Category 1) to 16.5% (Category 4) of the population is exposed to hurricane storm surge. It is clear that Cape May County is the most threatened County with greater than 90% of their total population exposed to a Category 4 event, followed by Salem (58%) and Atlantic (44%) counties. However, all counties with the exception of Hunterdon, Morris, Somerset, Sussex and Warren have population exposed and potentially vulnerable to Category 4 storm surge.

While the probability of a hurricane hitting New Jersey may be relatively low, the potential impacts are very high. The storm surge associated with Superstorm Sandy measured 8.9 feet at its high point in Sandy Hook and severely affected regions of the State's shore. Sandy was the costliest natural disaster by far in the State of New Jersey causing billions of dollars in damages in New Jersey. As a result of Superstorm Sandy, over 325,000 housing units were damaged, totaling $5.9 billion in damages. Approximately 40,500 owners' primary residences and over 15,600 rental units sustained "severe" or "major" damage according to classifications made by HUD[45]. Data suggest that businesses in 113 of New Jersey's 565 municipalities incurred a combined $382,000,000 in commercial property losses and $63,900,000 in business interruption losses.

Floods are frequent and costly natural hazards in New Jersey in terms of human hardship and economic loss, particularly to communities that lie within flood-prone areas or floodplains of a major water source. Riverine flooding is the most common type of flooding that impacts New Jersey. In New Jersey, development within the floodway is severely restricted. Generally, only development that must occur within the floodway is permitted, such as bridges, culverts, or bank stabilization measures. New buildings are prohibited in the floodway (except on piers in the Hudson River). Buildings are prohibited in the floodway not only to protect those members of the public that could be present in the building during a flood, but also to protect other members of the public downstream from floating debris that could result from construction within the floodway.

In 2011, New Jersey experienced widespread flooding and significant damage from Hurricane Irene. The storm surge of three to five feet caused moderate-to-severe tidal flooding along the ocean side and moderate tidal flooding in Delaware Bay and tidal sections of the Delaware River. Major flooding occurred on the Raritan, Millstone, Rockaway, and Passaic Rivers. However, the most damaging flooding from Hurricane Irene was not storm surge related, but was due to record rainfall, and resulting riverine flooding. Overall, Irene brought an average rainfall total of 7.03 inches with a

[45] http://www.renewjerseystronger.org/wp-content/uploads/2014/09/CDBG-DisasterRecoveryActionPlan_non_substantial_amendments_11-14-13.pdf

maximum rainfall total of 9.85 inches in Cranford (Union County). Hurricane Irene caused approximately $1 billion in damages and seven deaths in the State.[46]

Shoreline Erosion

Erosion and flooding are the primary coastal hazards that lead to the loss of lives or damage to property and infrastructure in developed coastal areas. Many natural factors affect erosion of the shoreline, including shore and near shore morphology, shoreline orientation, and the response of these factors to storm frequency and sea level rise. Coastal shorelines change constantly in response to wind, waves, tides, sea-level fluctuation, seasonal and climatic variations, human alteration, and other factors that influence the movement of sand and material within a shoreline system. As noted above, and in the Phase I Assessment, approximately 85% (578.2 miles) of New Jersey's coastline is identified as moderately high or very high vulnerability to shoreline erosion. Impacts from coastal storms, sea level rise and general subsidence of the coastal plain, further exacerbate this situation.

Coastal erosion can result in significant economic loss through the destruction of buildings, roads, infrastructure, natural resources, and wildlife habitats. Damage often results from an episodic event with the combination of severe storm waves and dune or coastal bluff erosion.

Historically, some of the methods used to combat coastal erosion or shoreline change have actually exacerbated the problem. Attempting to halt the natural process of erosion with hard structures typically worsens the erosion in front of the structure, prevents or starves any sediment behind the structure (groins) from supplying down-drift properties with sediment, and subjects down-drift beaches to increased erosion. Therefore, while hardened structures typically prove to be beneficial in reducing property damage, the rate of coastal erosion typically increases near stabilization structures. This increased erosion impacts natural habitats, spawning grounds, recreational activity areas, and public access (Frizzera 2011). Since most sediment transport associated with erosion and longshore drift has been reduced, some of the State's greatest assets and attractions – beaches, dunes, barrier beaches, salt marshes, and estuaries – are threatened and will slowly disappear as the sediment sources that feed and sustain them are eliminated.

To counteract the negative impacts of hard structures, alternative forms of shoreline stabilization, such as ecologically-based green infrastructure projects, which provide more natural forms of protection are being designed and implemented. As discussed in the Wetlands Phase I and II Assessments, the sheltered coastlines in New Jersey consist of tidal marshlands and a few narrow, sandy beaches—all of which naturally migrate inland as the sea level rises. Experts have stated that marshes can keep pace with a 0.1 inch per year (inch/year) rate of sea level rise; however, the State's current rate is approximately 0.11 to 0.16 inch/year, a rate that is predicted to continue increasing (Frizzera 2011).

Sea Level Rise/Flooding

A 2013 report by Rutgers University - *Probabilistic reanalysis of twentieth-century sea-level rise*[47] - indicates that sea level has been steadily rising, with sea levels along the New Jersey coastline rising faster than the global average. Flooding events associated with storm surge caused by hurricanes and tropical storms could therefore also increase. As noted above, and in the Phase I Assessment, approximately 98% (655.6 miles) of New Jersey's coastline is identified as moderately highly, or

[46] http://www.ready.nj.gov/programs/pdf/mitigation2014b/mit2014_section5-6.pdf
[47] http://www.nature.com/nature/journal/v517/n7535/full/nature14093.html

very highly vulnerable to sea level rise. Sea level rise projections for New Jersey range from 7 to 16 inches by 2030; 13 to 28 inches by 2050; and, 30 to 71 inches by 2100[48]. The greatest uncertainty surrounding sea level rise estimates is the rate and magnitude of ice sheet loss, primarily from Greenland and West Antarctica. Further, recently released reports from NOAA indicate that nuisance flooding - defined by NOAA's National Weather Service as between one to two feet above local high tide – will occur more and more frequently.

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

| Emerging Issue | Information Needed |
|---|---|
| Riverine flooding | New Jersey is aware of where riverine flooding occurs now and can adequately alert residents about flooding events using existing gauges. However, the necessary information and modeling to accurately project future flooding events is beyond our current resources. |

**In-Depth Management Characterization:**

**Purpose**: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.

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

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

[48] Miller, K. G., Kopp, R. E., Horton, B. P., Browning, J. V. and Kemp, A. C. (2013), A geological perspective on sea-level rise and its impacts along the U.S. mid-Atlantic coast. Earth's Future, 1: 3–18. doi:10.1002/2013EF000135

| | | | |
|---|---|---|---|
| *Repair/replacement of shore protection structure restrictions* | Y | N | N |
| *Inlet management* | Y | N | Y |
| *Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)* | Y | N | N |
| *Repetitive flood loss policies (e.g., relocation, buyouts)* | Y | N | Y |
| *Freeboard requirements* | Y | N | N |
| *Real estate sales disclosure requirements* | N | N | N |
| *Restrictions on publicly funded infrastructure* | Y | N | Y |
| *Infrastructure protection (e.g., considering hazards in siting and design)* | N | N | N |
| *Other (please specify)* | | | |
| **Management Planning Programs or Initiatives:** | | | |
| *Hazard mitigation plans* | Y | N | N |
| *Sea level rise/Great Lake level change or climate change adaptation plans* | N | N | Y |
| *Statewide requirement for local post-disaster recovery planning* | N | N | N |
| *Sediment management plans* | N | N | N |
| *Beach nourishment plans* | Y | N | N |
| *Special Area Management Plans (that address hazards issues)* | N | N | N |
| *Managed retreat plans* | N | N | N |
| *Other (please specify)* | | | |
| **Research, Mapping, and Education Programs or Initiatives:** | | | |
| *General hazards mapping or modeling* | Y | N | Y |
| *Sea level rise mapping or modeling* | Y | N | Y |
| *Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)* | Y | N | N |

| | | | |
|---|---|---|---|
| *Hazards education and outreach* | Y | N | Y |
| *Other (please specify)* | | | |

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

**Identification of Priorities:**

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

   *Management Priority 1*
   Identify appropriate activities to protect, accommodate, and/or avoid the impacts to community assets from coastal hazards over the short-, mid-, and long-term.

   *Management Priority 2*
   Assist coastal communities with the planning and implementation of hazard mitigation strategies, including the adoption of Best Management Practices, ordinances, and changes to municipal master plans.

   *Management Priority 3*
   Work towards development and adoption of regulatory changes to the CZM rules that incorporate resiliency planning and hazard mitigation strategies which address the identified coastal hazards; while enhancing the capacity of the NJCMP.

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

| **Priority Needs** | **Need?** (Y or N) | **Brief Explanation of Need/Gap** |
|---|---|---|
| Research | Y | Clear understanding of implications of sea level rise, frequency and intensity of storm events |
| Mapping/GIS/modeling | Y | Continued mapping of coastal environmental features; review and update of existing data sets |
| Data and information management | N | |
| Training/Capacity building | Y | Need internal and external training on coastal hazards, mitigation strategies, impacts on resources/assets, monitoring |

| | | |
|---|---|---|
| | | and most recent research/studies |
| Decision-support tools | Y | Need cost benefit analysis of different strategies |
| Communication and outreach | Y | Need tools that effectively communicate the impacts of coastal hazards to communities |
| Implementation Mechanisms | Y | Ordinances, adoption of Best Management Practices, resiliency planning policies, enabling rule changes |

**Enhancement Area Strategy Development:**

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

   Yes __X__
   No _____

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

   In the wake of Superstorm Sandy, the need to identify new planning approaches to assist coastal communities address the impacts of development and coastal hazards is apparent. The potential loss of life and property from the increasing risk of coastal hazards and the continued loss of coastal resources requires the identification and implementation of land use planning strategies that consider and respond to those hazards. These strategies play a critical role in creating a more resilient future for New Jersey's coastal communities.

   The NJDEP is currently engaged in piloting a comprehensive planning process with coastal communities that identifies municipal actions in response to coastal hazards, protection of New Jersey's coastal resources, is tailored to consider coastal community needs and simplifies the CAFRA permitting process by coordinating the State and municipal review of proposed developments minimizing the resources and time expended. The results of this pilot project may help inform future changes to the CZM rules' existing approach for coordinating State and local land use and infrastructure decisions as well as establishing a timely and predictable process for the joint review of development within the CAFRA zone. However, additional effort will be required to translate the NJDEP's current data, planning processes, and planning tools into a valid program enhancement.

# Cumulative and Secondary Impacts

## PHASE II (IN-DEPTH) ASSESSMENT

### In-Depth Resource Characterization:

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

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

| | **Stressor/Threat** | **Coastal Resource(s)/Use(s) Most Threatened** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|---|
| Stressor 1 | Continued Development and Sprawl | Forest cover loss and fragmentation, habitat loss, freshwater wetlands | Atlantic coast, primarily Monmouth and Ocean Counties |
| Stressor 2 | Lack of Coordinated and Comprehensive Planning | Forest cover loss and fragmentation, habitat loss, freshwater wetlands, water quality | Throughout coastal zone but primarily Monmouth and Ocean Counties |
| Stressor 3 | Coastal Hazards/Sea Level Rise | Water supplies and water quality, habitat, wetlands and fisheries, barrier islands and beaches, public infrastructure | Throughout coastal zone |

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

   Population and development in the State continued to increase during the assessment period. The State as a whole is estimated to have increased in population 1.6% between 2010 and 2014. It was varied in the Atlantic coast counties however, with Ocean and Atlantic counties gaining 1.2% and 0.5% respectively, while Monmouth had a -0.1% decrease, as did Cape May (-1.4%).

   Another growth indicator, residential building permits, shows that with the exception of Atlantic County, coastal counties had significant increases in authorized permits. However, many of these permits in Ocean and Monmouth counties are likely to be a result of rebuilding after Superstorm Sandy. Although population has decreased in Cape May County, building permits remain strong due to the redevelopment of properties on the barrier islands and infill development in commercial and retail centers.

The net result of continued development is the conversion of forest and critical wildlife habitat to developed land resulting in the fragmentation of large tracts of land and loss of habitat value. The most significant loss of forest cover in the coastal zone between 2006 and 2010 occurred in the two counties that had population increases - Ocean and Atlantic. Ocean County converted 19.21 square miles of forest to developed land, while Atlantic County converted 4.36 square miles. The loss of forest in Ocean County was more than three times the total loss in Cape May, Cumberland, Burlington, and Monmouth Counties combined.

The 1993 amendments to the CAFRA required that the rules adopted to implement those amendments be closely coordinated with the State Plan. In addition, the 1993 legislation amended the State Planning Act to allow the SPC to adopt the coastal planning policies of the NJDEP's coastal rules as the State Plan in the CAFRA area. In response, 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.

In the intervening years, the State Plan process has undergone changes that provide for a more comprehensive planning analysis, resulting in the current Plan Endorsement process. The Plan Endorsement process 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. Municipalities have worked through the Plan Endorsement and CAFRA center approval process with the NJDEP and other state agencies.

However, in recent years, the SPC has proposed a State Strategic Plan that would eliminate the existing State Plan Policy Map and the Plan Endorsement process. In light of these changes, the NJDEP is exploring alternative processes to determine appropriate locations for growth and limited growth in the CAFRA area. This would include an independent process for designating growth and limited growth areas that is consistent with CAFRA and State Plan policies, incorporates coastal resource protection standards and growth management strategies, as well as integrates principles of sustainability, resiliency, and adaptation.

Without a coordinated planning process that creates coastal communities with effective, consistent resource protections and responses to coastal hazards, New Jersey's coastal zone will continue to be degraded through the cumulative and secondary impacts of unplanned, uncoordinated development. A survey of external stakeholders indicated that 65% of respondents felt that a lack of resource protection standards at the local level is the biggest issue influencing cumulative and secondary impacts. 55% of respondents felt that continued development and sprawl was the biggest issue, and a lack of a coordinated state planning process was cited by 50% of respondents as a key issue. A full 70% of respondents cited a comprehensive planning program for coastal communities as the State's greatest need in combating cumulative and secondary impacts.

Superstorm Sandy was harsh reminder that coastal communities are vulnerable to the risk of damage from storms and flooding. Sea level rise increases the frequency and severity of coastal flooding in human and natural systems, even if storm patterns remain the same. By all accounts, current signs of rising waters, like increased flooding, beach erosion, and retreating coastal marshes will become more pronounced in the future. Even small amounts of sea level rise make rare floods more common by adding to tides and storm surge.

Geoscientists estimate that sea levels along the New Jersey shore will rise 1.5 feet by 2050 and 3 feet by 2100 - levels up to 15 inches higher than average global sea level rise projections through the end of the century.

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

| Emerging Issue | Information Needed |
|---|---|
| Outdated data/mapping | Updated/new mapping/location of environmental features; review/update existing data sets |

**In-Depth Management Characterization:**

**Purpose**: To determine the effectiveness of management efforts to address identified problems related to the cumulative and secondary impacts enhancement objective.

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

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

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

<u>CSI GIS Mapping/Database</u>

a.) The NJDEP and NJCMP continue to make significant progress in GIS mapping, including:

*Land Use Land Cover 2012 Update*
The 2012 Land Use/Land Cover dataset will be the fifth such data set that the NJDEP has produced. The initial land use/land cover layer was based on aerial photography captured in the

spring of 1986. The second iteration of the land use data was based on photography captured in 1995, the third based on photography captured in the spring of 2002, and the forth based on photography captured in the spring of 2007.

*Light Detection and Ranging (LiDAR) GIS Coverage Updates*
Project Completed. The U.S. Geological Survey (USGS) has completed LiDAR for Bergen, Essex, Hudson, Union, Middlesex, and Monmouth Counties, along with the Morristown National Historical Park area. This data is tide-coordinated to +/- 2 hours from mean low tide. Nominal Pulse spacing is 0.7m with a vertical RMSE of 9.25cm. This is better than previously LiDAR collected before, and a 1-meter DEM is a deliverable. This data can yield 1-foot contours.

*Coastal Wetland Boundary GIS Development and Mapping Update*
The NJDEP is inventorying all coastal wetland base maps (mylars, etc.) that were promulgated under the Wetlands Act of 1970. However, there have been multiple regulatory changes to these maps in the intervening years. This project will inventory all of these maps, and changes, resulting in a detailed database. This database will act as an inventory for the scanning of these maps. Additionally, the inventory will inform the scanning, geoprocessing, and digitzation of the Upper Wetlands Boundary, informing NJDEP regulatory decisions.

*Digitized Source Selection Tideland Maps*
NJDEP's Source Selection Series Photo Basemaps set of hardcopy (paper) photo-basemaps created for the riparian mapping program identify the final Source Selection for each segment of the riparian claims made by the state, created in the 1980s. Due to the age of these paper maps, and the frequency of handling for many of them, damage and wear has occurred. The intent of this project was to preserve the original basemaps from further deterioration, and complete the creation of a geo-referenced digital image layer from the paper Source Selection series for use in various GIS applications.

b. These changes were not 309 driven.

c. The development and updating of these data sources will help to inform NJDEP regulatory and planning decisions, and will also provide the NJCMP with the ability to identify appropriate evaluation and metric development.

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

   Additional information and data is needed to assist the NJCMP in determining and mitigating for specific coastal resource impacts from cumulative and secondary impacts of development.

**Identification of Priorities:**

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

*Management Priority 1: Comprehensive Planning*
The NJCMP seeks to integrate the Sustainable Coastal Communities (2011-2015 Strategy) and RCCI (see Coastal Hazards Assessment) into a single comprehensive program addressing cumulative and secondary impacts and coastal hazards at the municipal level. As municipalities in New Jersey have significant planning and implementation authority, these issues are most appropriately addressed by municipalities through a single program that links these issues. Accordingly, the NJCMP has developed a strategy that focuses on development of policies and best management practices, and implementation of strategies, that reduce cumulative impacts, risk, and vulnerability to coastal hazards.

*Management Priority 2: Coastal Features Mapping/Data Collection*
Mapping of coastal resources and land use land cover changes is critical to identifying and monitoring cumulative and secondary impacts. In order to better manage land use and resource protection, it is necessary to baseline the current status of New Jersey's coastal resources. It is proposed that a project be undertaken that results in mapping of lands and waters that are identified in the NJCMP as special areas. Special areas as defined under the CZM rules are areas that are so naturally valuable, important for human use, hazardous, sensitive to impact, or particular in their planning requirements, as to merit focused attention and special management rules. Generally, special areas are discrete geographic features, areas, or sites that encompass specific geomorphological conditions, hazardous locations, important infrastructure, and/or habitats. Most of these features can be better protected or managed when they are clearly documented, delineated, and their locations made publicly available. Currently, the NJCMP relies on a wide variety of sources to identify special areas, many of which are not currently mapped and/or are mapped but require updating. Additionally, the lack of mapping which provides a baseline for these important features can exacerbate regulatory disputes and result in inconsistent permitting decisions. Creating a set of baseline maps improves the regulatory management of New Jersey's coastal zone and establishes a starting point to conduct future analysis of uses and resources to inform decision making and program/policy development.

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

| **Priority Needs** | **Need?** (Y or N) | **Brief Explanation of Need/Gap** |
|---|---|---|
| Research | Y | Clear understanding of cumulative impacts, their causes and preventive strategies. |
| Mapping/GIS | Y | Continued mapping of coastal environmental features; review and update of existing data sets |
| Data and information management | Y | Methods, and monitoring to assess impacts of land use changes |
| Training/Capacity building | N | |
| Decision-support tools | N | |
| Communication and outreach | Y | Enhanced outreach to coastal communities |

**Enhancement Area Strategy Development:**

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

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

   In light of the proposed changes to the State Planning process, the NJDEP is exploring alternative processes to determine appropriate locations for growth and limited growth in the CAFRA area. This would include an independent process for designating growth and limited growth areas that is consistent with CAFRA and State Plan policies, incorporates coastal resource protection standards and growth management strategies, as well as integrates the principles of sustainability, resiliency and adaptation. An improved and coordinated planning process that creates coastal communities with effective, consistent resource protections and responses to coastal hazards would reduce impacts of cumulative and secondary impacts in the CAFRA area.

   In the wake of Superstorm Sandy, the need to identify new planning approaches to assist coastal communities address the impacts of development and coastal hazards is apparent. The potential loss of life and property from the increasing risk of coastal hazards and the continued loss of coastal resources requires the identification and implementation of land use planning strategies that consider and respond to those hazards. These strategies play a critical role in creating a more resilient future for New Jersey's coastal communities.

   The NJDEP is currently engaged in piloting a comprehensive planning process with coastal communities that identifies municipal actions in response to coastal hazards, protection of New Jersey's coastal resources, is tailored to consider coastal community needs and simplifies the CAFRA permitting process by combining the State and municipal review of proposed developments minimizing the resources and time expended. The results of this pilot project may help inform future changes to the CZM rules' existing approach for coordinating State and local land use and infrastructure decisions as well as establishing a timely and predictable process for joint review of development within the CAFRA zone. However, additional effort will be required to translate the NJDEP's current data, planning processes, and planning tools into a valid program enhancement.

# Ocean and Great Lakes Resources

## PHASE II (IN-DEPTH) ASSESSMENT

### In-Depth Resource Characterization:

**Purpose**: To determine key problems and opportunities to enhance the state CMP to better address cumulative and secondary impacts of coastal growth and development.

1. What are the three most significant existing or emerging stressors or threats to ocean and Great Lakes resources within the coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone or are specific areas most threatened? Stressors can be land-based development; offshore development (including pipelines, cables); offshore energy production; polluted runoff; invasive species; fishing (commercial and/or recreational); aquaculture; recreation; marine transportation; dredging; sand or mineral extraction; ocean acidification; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

| | **Stressor/Threat** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Stressor 1 | Offshore Energy Development, both emerging and O&G | Throughout |
| Stressor 2 | Sand Extraction | Throughout, closer to shore |
| Stressor 3 | Increasing use overall(shipping, development, noise , extraction(biological and mineral) | Throughout |

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

   There is an increase in demand to utilize the ocean environment for alternative energy such as wind turbines, with Wind Energy Areas identified offshore New Jersey and New York that are part of highly utilized ocean environment, and conventional sources, such as oil and gas and Deepwater LNG ports, such as the Port Ambrose proposed project; increasing demand for offshore sand for beach nourishment projects utilized in post storm disaster relief; the use of high power seismic surveys in both scientific geologic studies looking at establishing ancient climate records and utilizing similar technology for offshore oil and gas (geological and geophysical)survey work in the Mid-Atlantic and South Atlantic OCS planning areas. Coupled with the need for better management of existing uses and resources, it is clear that in order for New Jersey to protect and enhance its resources, uses, and economy the NJCMP will have to continue to focus attention on ocean resources management.

   Since the previous assessment, there has been a great deal of continued interest in energy facility siting in New Jersey's coastal waters and offshore areas. A renewed interest in exploration for oil and gas in the Atlantic Ocean has occurred. The energy development interest has ranged from LNG facilities, to wind turbines, and other renewable energy facilities. The coastal zone with its dense

population, high energy demands, and congested transmission capacity is considered a prime market for siting new energy facilities. The production, distribution, and use of energy, unless wisely managed, can threaten air and water quality, human health conditions, and the economy of New Jersey. Since the previous assessment, there have been multiple proposed Deepwater LNG ports in federal waters, and continued interest in LNG ports within state and federal waters.

Geological and Geophysical Surveys and Five-Year program

A Bureau of Ocean Energy Management (BOEM) Five-Year program establishes a schedule of oil and gas lease sales proposed for planning areas of the OCS indicating the size, timing, and location of proposed leasing activity which the Secretary determines will best meet national energy needs for the five-year period following its approval. In order to be offered for leasing an area must be included in an approved Five-Year program. Section 18 of the OCS Lands Act prescribes the major steps involved in developing a Five-Year program including opportunities for public comment. Under Section 18, a Five-Year program must, to the maximum extent practicable, strike a balance between the discovery of oil and gas, potentials for environmental damage and adverse impacts on the coastal zone. BOEM published a Request for Information (RFI) in the Federal Register on June 16, 2014. This was the first step in developing the next Five-Year OCS Oil and Gas Lease sale plan.

In the Draft Proposed Program (DPP) Decision Document, information on all 26 OCS planning areas is presented, with a consideration of comments received under the RFI. The DPP schedules 14 potential lease sales for the 2017–2022 period in eight program areas – 10 sales in the Gulf of Mexico, one in the Atlantic (which would cover portions of two planning areas, the Mid-Atlantic and South Atlantic) and three off the coast of Alaska. New Jersey is considered to be in the North Atlantic OCS planning area. BOEM received nine applications under the geological and geophysical permitting program as part of this Five-Year program.

Offshore wind

Although New Jersey's onshore wind potential is constrained, the New Jersey has great offshore wind potential. New Jersey may be one of the first states to support the construction of one or more offshore wind facilities, but it must not rush headlong into long-term contracts between offshore wind developers and Economic Development Corporation until the State has determined there are appropriate net economic benefits available from this promising technology. The Christie Administration supports the Board of Public Utilities due diligence process to safeguard the economic interests of ratepayers throughout the State while promoting job creation and environmental benefits. New Jersey's current EMP was released in December 2011 with a goal of installing at least 1100 MWs of offshore wind by 2020.

BOEM coordinates OCS renewable energy activities that are offshore of New Jersey through its Intergovernmental Renewable Energy Task Force, which is made up of representatives from federal, state, local and tribal governments. On April 20, 2011 BOEM issued a Call for Information and Nominations which identified approximately 350,000 acres in federal waters for the development of offshore wind. In response to the Call, eleven companies expressed interest in developing offshore wind projects, resulting in the utilization of BOEM's lengthier competitive lease auction process. Subsequently, on February 3, 2012 BOEM published a Notice of Availability of an Environmental Assessment and Finding of No Significant Impact for commercial wind lease and site assessment activities on the Atlantic OCS offshore New Jersey. Additionally, on July 21, 2014 BOEM published a Proposed Sale Notice in the Federal Register requesting public comments on BOEM's proposal to

auction two leases offshore of New Jersey for commercial wind development. BOEM expects to conduct a lease auction in 2015 as a next step in the process of developing New Jersey's offshore wind resources.

Post Superstorm Sandy sand resources and use

Since Superstorm Sandy, BOEM has been working with the USACE, other members of the federal government's Hurricane Sandy Task Force, state coastal planning agencies, state geological surveys, and other entities to analyze the needs for coastal restoration and to develop restoration plans.

The NJDEP and USACE are working together to advance beach and dune construction projects that will reduce risk to life, property, and infrastructure by rebuilding 44 miles of New Jersey coastline and providing the State with the most comprehensive and continuous coastal protection system it has ever had.

As a part of the federal government's continuing commitment to help coastal communities recover from Superstorm Sandy and promote resilient coastal systems, BOEM and the State signed a two-year cooperative agreement totaling $400,000 to identify sand resources for coastal resilience and restoration planning. The agreement will help BOEM and New Jersey conduct research that will help coastal communities recover from Superstorm Sandy, restore habitat, increase our knowledge of sand resources offshore, and contribute to long-term coastal resilience planning efforts.

Under this agreement, the NJDEP, Geological and Water Survey (NJGWS) will focus on assessing sand resources offshore of Monmouth and northern Ocean counties to support a range of activities, including shoreline and habitat restoration efforts. The NJGWS will develop resource maps and review existing marine geological studies to assist BOEM in identifying sand resources that can be included as a component of state coastal resilience and restoration planning. The NJGWS has an ongoing program to identify sand resources in both state and federal waters.

Fisheries

Out of the 26 species or species groups covered by the Atlantic States Marine Fisheries Commission's 2015 stock assessment overview, approximately 14 are either depleted, overfished, or their status is unknown. Most of these species are currently being removed at or below the rates established in fisheries management plans, with eight species or species groups for whom it is unknown if overfishing is currently occurring. None of the species managed by the Mid-Atlantic Fishery Management Council, that oversees fisheries in the federal waters from New York to North Carolina, are considered overfished.

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

| Emerging Issue | Information Needed |
|---|---|
| Seismic Surveys | Impacts to biota, lacking fish response to high energy noise |
| Ocean Acidification | Impacts to shellfisheries offshore, major NJ fishery |
| Climate Change | Storm increase (severity, number) Sea Level Rise, fishery and ecosystem shifts. |

**In-Depth Management Characterization:**

**Purpose**: To determine the effectiveness of management efforts to address identified problems related to the ocean and Great Lakes resources enhancement objective.

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

| **Management Category** | **Employed by State or Territory** (Y or N) | **CMP Provides Assistance to Locals that Employ** (Y or N) | **Significant Changes Since Last Assessment** (Y or N) |
|---|---|---|---|
| Ocean and Great Lakes research, assessment, monitoring | Y(as part of regional efforts) | N | Y |
| Ocean and Great Lakes GIS mapping/database | Y(as part of regional efforts) | N | Y |
| Ocean and Great Lakes technical assistance, education, and outreach | Y(as part of regional efforts) | N | Y |
| Other (please specify) | | | |

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

Ocean Planning

The NJCMP considers each of the management categories identified above as ocean planning and each is addressed through the activities identified below.

a.) Although ocean planning and regional initiatives were started during the previous assessment and strategy, the level of effort has increased considerably. The Mid-Atlantic RPB required a substantial investment of time and effort from the MARCO states to get it off the ground and this level of efforts continues as ocean planning efforts advance. Ocean planning is still 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. Ocean planning remains a priority for the NJCMP. The

portal discussed previously, continues to be upgraded and enhanced and is critical to advancing these efforts.

Significant and new efforts covering the management categories of ocean research, assessment, monitoring, mapping, and outreach are underway since the previous assessment through both MARCO and the Mid-Atlantic RPB including:

*MARCO*

Public Listening Sessions

In order to effectively gather substantive stakeholder input on draft documents being release by the Mid-Atlantic RPB and on the regional ocean planning process generally, the MARCO hosted five public listening sessions in November 2014 throughout the region which were attended by approximately 100 members of the public. The objectives of each public listening session were to:

- Provide Mid-Atlantic stakeholders with an update on regional ocean planning activities in the Mid-Atlantic region, focusing on draft documents released for public review and comment, including:
    - Mid-Atlantic Regional Ocean Action Plan Options;
    - Mid-Atlantic Regional Planning Body Interim Stakeholder Engagement Plan; and
    - Status of the Mid-Atlantic Regional Ocean Assessment;
- Discuss the role and functionality of the MARCO Mid-Atlantic Ocean Data Portal as a tool to support ocean planning; and
- Receive input and answer questions from stakeholders about regional ocean planning in general and the draft materials released for public input.

MARCO's Stakeholder Liaison Committee (SLC) and Sector Specific meetings

The SLC was formed in March of 2014 to help build capacity for ocean planning in the Mid-Atlantic region. The objectives of the SLC are to utilize the leadership role and communication networks of SLC members to:

- Provide direct input and feedback to MARCO about design and implementation of regional ocean planning in the Mid-Atlantic;
- Act as a conduit for information between stakeholders in the region and MARCO about regional ocean planning; and
- Serve as a venue for increasing dialogue, understanding, and communication among stakeholders.

To most effectively meet these objectives, MARCO is proposing a shift in approach from larger, full-committee style engagements to more targeted engagements, which would take place through sector-specific meetings, multi-sector meetings, and webinars, as described below.

Sector-specific meetings

MARCO has already hosted two sector-specific meetings (submarine cable and tug and barge) which proved to be successful engagements furthering understanding of issues and concerns from the sectors' perspective, as well as communicating information about ocean planning in the region.

Webinars
SLC members provided feedback to MARCO indicating that the use of webinars is a useful tool for communicating with the Mid-Atlantic RPB and on ocean planning activities in the region.

Issue Specific Meetings
MARCO, in collaboration with the Maryland and Virginia Sea Grant Programs and the NOAA's Okeanos Explorer team, convened a meeting of resource managers and scientists in Baltimore, Maryland on September 12, 2014 that focused on the state of knowledge of the Mid-Atlantic submarine canyons and opportunities for future collaboration on the region's continental shelf-slope data collection, analysis, and synthesis.

*Mid-Atlantic Ocean Data Portal*
The data portal (http://portal.midatlanticocean.org/portal/) is an online tool kit and resource center that consolidates available data and enables state, federal, and local users and the general public to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas, and energy sites. The data portal is continually updated as appropriate data sets that align with MARCO priorities become available.

The data portal serves as a platform to engage all stakeholders in the five coastal Mid-Atlantic States by putting all of the essential data and state-of-the-art mapping and visualization technology into the hands of the agencies, industry, community leaders, and stakeholders engaged in ocean planning.

*Mid-Atlantic Regional Planning Body*
An in-person meeting of the Mid-Atlantic RPB took place on January 21-22, 2015 at the Jacob K. Javits Federal Building in New York, New York. Meeting participants included state, federal, and tribal RPB members, a member of the Mid-Atlantic Fishery Management Council (MAFMC), and appointed alternates. Approximately 63 members of the public were in attendance, and approximately 19 comments were offered during the public comment sessions. A complete listing of RPB members and alternates representing state, federal, and tribal governments, and the MAFMC can be found at http://www.boem.gov/Mid-Atlantic-RPB-Roster/. The meeting was chaired by state, federal, and tribal RPB co-leads and facilitated by Meridian Institute, which also developed a summary document.

The objectives for the third RPB meeting were to:

- Refine and approve a proposed approach for a Mid-Atlantic Regional Ocean Action Plan;
- Identify next steps to develop the plan, including a work plan, a stakeholder engagement plan, and inter-jurisdictional coordination opportunities and actions;
- Develop clear and detailed guidance for further development of the Regional Ocean Assessment;
- Share information about activities underway that are relevant for Mid-Atlantic regional ocean planning; and
- Receive public input on topics under consideration by the Mid-Atlantic RPB.

Next steps identified for the RPB resulting from the January 2015 meeting include the continuation and/or establishment of the three workgroups:

- *IJC:* identifying short- and long-term region-wide and geographically-specific opportunities and actions, using the working criteria discussed as touchstones;

- *Data synthesis:* reviewing existing methodologies for ecological and economic analyses the RPB could pursue and make a recommendation on one or more analyses to undertake to inform the development of the Ocean Action Plan in the short and longer term; and
- *ROA:* in the near-term, crafting a white paper to describe what is important and special about the Mid-Atlantic ocean region, including a rationale for regional ocean planning.

Once formed, all workgroups will reflect on the critical role stakeholder engagement will play in the activities of their respective workflows, and the RPB will consider how to deploy the appropriate engagement mechanisms at the appropriate moments to ensure that progress is informed by stakeholder input.

Two other in person meetings of the RPB and two webinars were held in the 2011 -2016 309 Assessment and Strategy time period. Information specific to those meetings and webinars can be found at http://www.boem.gov/MidA-RPB-Meetings/.

b) New Jersey's participation in these efforts was 309 driven. Currently New Jersey's MARCO and Mid-Atlantic RPB involvement is staffed by OCLUP responsible for the day to day coordination of actions and program development.

c) New Jersey's continued participation in the development of the data 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.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in planning for the use of ocean and Great Lakes resources since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's or territory's management efforts?

   These efforts are still in the early stages of advancing regional ocean planning efforts.

**Identification of Priorities:**

1. Considering changes in threats to ocean and Great Lakes resources and management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where there is the greatest opportunity for the CMP to improve its ability to effectively plan for the use of ocean and Great Lakes resources. *(Approximately 1-3 sentences per management priority.)*

   *Management Priority 1: Ensure New Jersey ocean resource interests are addressed in regional ocean planning efforts.*
   To leverage the resources available through both MARCO and the Mid-Atlantic RPC, the NJCMP will continue to participate in these efforts and seek to ensure that New Jersey ocean resource objectives are addressed.

   *Management Priority 2: Spatial data mapping efforts of coastal and ocean resources and uses*
   The NJCMP will gather information and data that improves ocean planning, resource protection, and sustainable uses. The NJCMP will work with partners to fill gaps in data on ocean resources and potential impacts of ocean uses.

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

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Research | Y | Continued need for best available data |
| Mapping/GIS | Y | Many on the needs are spatially based |
| Data and information management | Y | Massive amount of information, ROA |
| Training/Capacity building | Y | Outreach to stakeholders, use of Portal |
| Decision-support tools | Y | These need to be developed and used for the Mid-Atlantic RPB |
| Communication and outreach | Y | Communication is critical with stakeholders to ensure they are engaged (look at stakeholder workplan) |

**Enhancement Area Strategy Development:**

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

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

   This enhancement area is given a high priority because of the continued and increasing 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. There is increasing demand to utilize the ocean environment for alternative energy such as wind turbines, with wind energy areas identified offshore of New Jersey and New York that are part of a highly utilized ocean environment, and for conventional sources, such as oil, gas, Deepwater LNG ports, such as the Port Ambrose proposed project. Also there is increasing demand for offshore sand for beach nourishment projects utilized in post storm disaster relief; the use of high power seismic surveys in both scientific geologic studies looking at establishing ancient climate records and in utilizing similar technology for oil and gas survey work in the Mid-Atlantic and South Atlantic OCS planning areas. Coupled with the need for better management of existing uses and resources, it is clear that in order for New Jersey to protect and enhance its resources, uses and economy the NJCMP will have to continue to focus attention on ocean resources management. This will include continuation of efforts with MARCO, the Mid-Atlantic RPB and work with federal agencies to enhance coordination with stakeholders; spatial and informational data compilation, synthesis and analysis; and advancing ocean planning as a means to promote ocean ecosystem health, functionality, and integrity through conservation, protection, enhancement, and restoration, while planning and providing for existing and emerging ocean uses in a sustainable manner that minimizes conflicts, improves effectiveness and regulatory predictability, and supports economic growth.

# Wetlands

## PHASE II (IN-DEPTH) ASSESSMENT

**In-Depth Resource Characterization:**

**Purpose:** To determine key problems and opportunities to improve the CMP's ability to protect, restore, and enhance wetlands.

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

| | **Stressor/Threat** | **Geographic Scope** (throughout coastal zone or specific areas most threatened) |
|---|---|---|
| Stressor 1 | Erosion of tidal marsh edge and marsh platform (interior marsh) | Coastal zone |
| Stressor 2 | Impacts of sea level change and storm surge; lack of buffers for wetlands migration | Coastal zone |
| Stressor 3 | Impacts to coastal ecosystems, habitats, fish and wildlife | Coastal zone |

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

   Stressor 1: Erosion of tidal marsh edge and marsh platform

   New Jersey's shoreline is an ever-changing environment. The interface between a tidal marsh and waterway is subject to dynamic forces of tides, winds, waves, and ice. Salt marshes expand according to the rate of plant growth and the supply of sediment as they adjust to changes in sea level.[49] Despite their ability to adapt to salinity and water conditions, marsh environments are fragile and are adversely affected by both anthropogenic intervention and natural conditions. Salt marshes protect shorelines from erosion by buffering wave action and trapping sediments. They reduce flooding by slowing and absorbing rainwater and protect water quality by filtering polluted runoff and by metabolizing excess nutrients.[50]

[49] FROM MARSH TO FARM; The Landscape Transformation of Coastal New Jersey; Sebold, 1992
[50] NOAA National Ocean Service

To understand how salt marshes drown or expand, we need to have an understanding of the balance between sediment supply, sea level rise, and vegetation. If the marsh platform evolves to an elevation lower than mean high tide, either through reduced sedimentation, land subsidence, or an increased rate of sea level rise, then these marsh plants will die and the marsh will drown. Drowning often results in a rapid loss of marsh elevation; once marsh plants die, the marsh sediments become susceptible to erosion, and marshes rapidly convert to subtidal flats (e.g., Fagherazzi et al., 2006)[51].

Residents of New Jersey's coastal zone can see and note changes to the marsh edge. As Downe Township Deputy Mayor Lisa Garrison noted in a recent article, ``Erosion is changing the face of the meadows." A recent study in New Jersey found interior marsh (i.e. marsh platform) loss from expanding channel networks and pond development is causing significant dissection of the marsh platform.[52] The researchers noted that the reduction in marsh habitat area has accelerated due to perimeter shore line erosion, sea-level rise, and coastal submergence. For example, along a marsh shoreline within the Mullica Great Bay estuary system, the researchers found that the rate of loss of saltmarsh habitat amounted to 1.6 m yr. between 1995 and 2008. As a means of reducing mosquito problems several organizations within the state developed and refined techniques for Open Marsh Water Management (OMWM). OMWM is a land management practice designed to control mosquitos by creating open water ponds on marsh or parallel grid ditching and salt hay farming to increase tidal exchange on the marsh.

The erosion of marsh edge and marsh platform can also result in an indirect impact to coastal shoreline development because marshes reduce storm surge wave heights due to their position in the coastal landscape and the plants growing on the surface. Severe erosion of the marsh edge results in a retreat of the marsh mat, thereby reducing the extent of the marsh.[53] Several recent reviews (Gedan et al., 2011; Shepard et al., 2011; Spalding et al., 2013)[545556] have found that salt marshes have a moderating influence on attenuating storm surge and waves and a moderately positive role in shoreline stabilization.

Stressor 2: Impacts of Sea Level Rise and Storm Surge

A 2013 report by Rutgers University indicates that sea level has been steadily rising, with sea levels along the New Jersey coastline rising faster than the global average. Continued seal level rise could indicate more frequent and more severe coastal flooding events (Rutgers 2013b). Flooding events associated with storm surge caused by hurricanes and tropical storms could therefore also increase. As noted above, and in the Phase I Assessment, approximately 98% (655.6 miles) of New Jersey's coastline is identified as moderately highly, or very highly vulnerable to sea level rise. Sea level rise projections for New Jersey vary from 7 to 16 inches by 2030, 13 to 28 inches by 2050, and 30 to 71 inches by 2100.

[51] Fagherazzi S., Carniello L., D'Alpaos L., Defina A., 2006, Critical bifurcation of shallow microtidal landforms in tidal flats and salt marshes: Proceedings of the National Academy of Sciences of the United States of America, v. 103, p. 8337–8341, doi: 10.1073/pnas.0508379103
[52] Emergent Vegetation: NERR SWMP Tier 2 Salt Marsh Monitoring in the Jacques Cousteau National Estuarine Research Reserve; Kennish, Fertig, and Petruzzelli
[53] Wave attenuation over coastal salt marshes under storm surge conditions, Möller, Kudella, Rupprecht, Spencer, Paul, van Wesenbeeck, Wolters, Jensen, Bouma, Miranda-Lange and Schimmels Nature Geoscience 7 ,Published online 29 September 2014 last revised November 2014.
[54] Gedan, K., Kirwan, M., Wolanski, E., Barbier, E., and Silliman, B. (2011). The present and future role of coastal wetland vegetation in protecting shorelines: answering recent challenges to the paradigm. Climate Change 106:7, 29.
[55] Spalding, M.D., Ruffo, S. , Lacambra, C., Melian, I., Hale, L.Z., Shepard, C.C. and Beck, M.W. (2014). The role of ecosystems in coastal protection: Adapting to climate and coastal hazards. Ocean & Coastal Management 90:50–57.
[56] Shepard, C.C., Crain, C.M. and Beck, M.W. (2011). The Protective Role of Coastal Marshes: A Systematic Review and Meta-analysis. PLos One ,6(11),e27374.

Tidal marshes can adapt and keep pace with sea level rise through vertical accretion and inland migration, but must remain at the same elevation relative to the tidal range and have a stable source of sediment. Coastal wetlands risk permanent inundation if sea levels rise faster than the rate by which they can accrete. Through the process of vertical accretion of sediment and organic matter, the tidal salt marsh surface will rise in relation to sea level, i.e., the marsh can continue to grow 'up' into a rising sea (Cahoon 2010). When sea level rises faster than marsh accretion, tidal marshes are drowned and replaced by unconsolidated shore (i.e., mud or sand flat) and eventually open water (Cahoon and Guntenspergen, 2010). The degree of wetland loss is directly related to the rate of sea level rise compared to the accretion rate. The combination of sea level rise and vertical accretion forces coastal wetlands to migrate inland causing upslope transitional brackish wetlands to convert to saline marshes and the saline marshes on the coastline to drown or erode.[57]

Along portions of New Jersey's coast, development located upland of the marsh edge forms a physical barrier to the gradual movement of marshlands inland, blocking the inland migration of these ecosystems as sea level rises. One concern along New Jersey's coast is that rising sea level will reduce the extent of some coastal marshes, changing them from vegetated areas to mud flats or open waters and that upland development will prevent the migration of tidal wetlands landward, resulting in an overall reduction of the extent of these vital components of the coastal ecosystem.

In a study from July, 2014, *Modeling the Fate of New Jersey's Salt Marshes Under Future Sea Level Rise*, conducted by the Rutgers University Center for Remote Sensing and Spatial Analysis, modeling results suggests that if sea level rises between one to two feet by 2050, existing tidal salt marsh in New Jersey could decline by approximately 5%, being replaced by open water and unconsolidated shore. One foot of sea level rise may cause more than 9,300 acres of salt marsh to convert to open water and nearly 2,000 acres of salt marsh could be impeded from retreat. The modeling also found that at a sea level rise of three feet or greater, salt marshes are not able to vertically accrete fast enough, increasing the loss and conversion of salt marsh. While the predicted loss may be balanced by 'new' marsh (i.e., unimpeded marsh retreat zone) it is unclear whether this 'new' marsh will have the same ecological value in the short-term (i.e. over decadal time scales) as the established tidal salt marshes that may be lost.

New Jersey's coastal wetlands on the Atlantic Coast are bordered by roads and extensive development. This hard infrastructure provides little or no natural buffer to our coastal wetlands. Adequate low elevation natural land cover buffers may allow coastal wetlands to migrate landward over time as sea level rises. Coastal buffers may also provide much-needed sediment required for coastal marsh elevations to rise with the rising sea level over time. The combination of sea level rise and vertical accretion forces coastal wetlands to migrate inland causing upslope transitional brackish wetlands to convert to saline marshes, and the saline marshes on the coastline to drown or erode. Along portions of New Jersey's coast, development located upland of the marsh edge forms a physical barrier to the gradual movement of marshlands inland, blocking the inland migration of these ecosystems as sea level rises. Further, because the State's Freshwater Wetlands Protection Act allows buffers to range in size from zero, in some cases, to 150 feet maximum, there has been an inclination to match, but not exceed, these buffer widths for coastal wetlands. As a result, over time, the width of buffers adjacent to coastal wetlands has declined.

[57] Cahoon, D. R. and G. R. Guntenspergen. 2010. Climate change, sea-level rise, and coastal wetlands. National Wetlands Newsletter, pp. 8-12. Cahoon, D. R. (2010). Sea-level rise impacts on salt marsh processes in the Northeast Region. Powerpoint presentation given at the Sea-Level Rise and Salt Marsh Restoration Workshop, NOAA Restoration Center, Gloucester, MA, September 14, 2010. 48 Slides. Accessed online on 11/13/13 at: http://www.habitat.noaa.gov/pdf/cahoon_slr_talk.pdf

Coastal wetlands in the Hudson River and Hackensack River estuaries occur in highly industrialized landscapes and generally do not possess vegetated buffers. The Delaware Bay has more natural buffer than any other tidally influenced coastal region in New Jersey. However, the extent of coastline from the Delaware River estuary to head of tide in Trenton is highly impacted by industry, development, and major roads. Vegetated buffers are needed in the long and significant stretch of brackish and freshwater tidal wetlands in New Jersey.

Stressor 3: Impacts to Coastal Ecosystems, Habitats, Fish and Wildlife

In July 2013, the NJDEP adopted amendments to the coastal general permit for habitat creation and enhancement to include living shoreline activities conducted by specific State and federal agencies, as well as research projects conducted by a college or university. The inclusion of living shoreline activities into a general permit removed some of the regulatory impediments for these projects. As of March 2015, the NJDEP is supporting the development of multiple coastal restoration/resiliency projects in New Jersey that are designed to enhance available habitat for fish and wildlife along the coast. The NJCMP is developing measures and metrics to evaluate the effectiveness of using living shorelines instead of typical hard structures that do not create coastal habitat and, in some cases, have been proven to promote invasive species. "Increased development around the bay, including bulkheads, pilings, and floating docks, may be providing more places for the *scyphistoma* (jellyfish) to attach. A single floating dock can hold thousands of *scyphistoma*, which asexually produce millions of jellyfish, such as Sea Nettles. Sea nettles, and some other jellyfish, have a relatively narrow salinity preference, so development of the waterfront within that salinity zone, especially pilings, floating docks, and bulkheads, may have inadvertently contributed to the spread of Sea Nettles and other jellyfish."[58]

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

| Emerging Issue | Information Needed |
|---|---|
| Marsh Integrity-erosional and depositional rates | Sediment loss, saltwater intrusion, impact of OMWM on peat and biomass integrity |
| Salinity Gradient: Saline, brackish, freshwater boundary shifts due to sea level rise | Evaluate the hydrodynamic modeling of salinity mapping from USGS; To better model projected wetland susceptibility to sea level rise more detailed information, on a local scale, is needed on maximum sustainable vertical accretion rates, interactions between sediment elevation, flooding, and biotic organic matter accretion; and factors that affect spatial variability in sediment accretion dynamics |
| NPS pollutants; sediment and nutrients | Evaluate the impacts of pollution from pesticides and fertilizers |
| Invasive Species | Evaluate the impacts of invasive species, particularly *Phragmites australis* and *scyphistoma* |

[58] http://bbp.ocean.edu/pages/323.asp

| | |
|---|---|
| Shoreline delineation | Comprehensive identification of hardened shoreline structures |
| Nature-based, ecological mitigation types | Inventory of alternative shoreline stabilization methodologies |
| Coastal data needs | Coastal elevation topography and bathymetry |

**In-Depth Management Characterization:**

**Purpose:** To determine the effectiveness of management efforts to address identified problems related to the wetlands enhancement objective.

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

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

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

<u>Wetland Assessment Methodologies</u>

*Marsh Futures*

a.) Marsh Futures is a research and development, field-based approach developed and piloted by the Partnership for the Delaware Estuary (PDE). The Marsh Futures approach examines both vertical challenges (interior marsh) and edge erosion vulnerability. The biotic conditions are scored and weighted to adjust elevation zones in polygons where conditions are degraded. These vulnerabilities are mapped and interpreted to prepare maps of recommended best management practices and interventions. Marsh Futures pairs shoreline histories with rapid survey methods and "elevation capital" concepts to efficiently develop strategic project recommendations for

particular salt marsh tracts and is intended to add value to desktop planning tools used by local planning agencies.

b.) This change was not 309 driven.

c.) Marsh Futures is a type of wetlands monitoring designed to define the current marsh conditions. This approach will help in defining the present marsh conditions. The NJCMP will use Marsh Futures as a pilot to determine if this tool, or a version of this tool, is user-friendly for citizen scientist.

*Wetlands Assessment Protocol*

a.) In 2011 the USEPA developed, and helped states implement, the first NWCA using extensively researched and nationally tested protocols. Three levels of assessment were used: Level 1 Landscape (GIS), Level 2 Rapid Assessment Method (RAM), and Level 3 Intensive Field Method.[59] The NWCA Field Operations Manual is available for a more in-depth review.[60]

The core method being used in the New Jersey study is called the Ecological Integrity Assessment (EIA) Protocol developed by NatureServe and Natural Heritage Program Ecologists from states nationwide. The 2012 version of the EIA Protocol can be downloaded at http://www.natureserve.org/sites/default/files/publications/files/assessment_of_wetland_condition_part_b_eia_standards_0.pdf. An updated and revised EIA manual, based on several years of testing, will be available during the 2015 field season.

New Jersey is also testing another method in conjunction with the NWCA and EIA methods on coastal wetlands intensive (Level 3) sites called the Mid-Atlantic Tidal Rapid Assessment Method, or Mid-TRAM. The June 2010 protocol from the Delaware Department of Natural Resources and Environmental Control is available at: http://www.dnrec.delaware.gov/Admin/DelawareWetlands/Documents/Tidal%20Rapid_Protocol%203.0%20Jun10.pdf.

b.) These changes were not 309 driven.

c.) An updated and revised Mid-TRAM method, tested on tidal wetlands in Delaware and Pennsylvania, as well as the Barnegat Bay and Delaware Bay in New Jersey, will be released during the spring of 2015. More information can be found at http://delawareestuary.org/node/198.

Wetland Mapping and GIS

*Land Use/Land Cover Update*

a.) The NJDEP has updated its Land Use/Land Cover data (LU/LC) to account for changes in how wetlands are mapped. Specifically, changes have been made to the wetlands polygons to capture where there is a transition from vegetation to water or to mud. Other mapping needs have been identified as well and we are currently working on them via the USEPA wetlands grant and possibly NJCMP funding.

b.) This change was not 309 driven.

[59] http://water.epa.gov/type/wetlands/assessment/survey/upload/NWCA-Site-Evaluation-Guidelines_Jan11.pdf
[60] http://water.epa.gov/type/wetlands/assessment/survey/upload/FOM-with-Errata.pdf

c.) The updated Land Use/Land Cover mapping enables the NJDEP to identify shifting wetlands boundaries, depict the changing landscape, and inform permit decisions while planning for resiliency and mitigation.

*Wetlands Mitigation Tracking*

a.) The NJDEP has begun to input mitigation sites into its GIS layers. In 2012, the NJDEP received a grant from USEPA specifically to input mitigation data into the State's NJEMS database. At the same time, each approved mitigation site and mitigation bank is being digitized to create a GIS layer that will show all wetland mitigation sites State-wide. Restructuring the data input provides the mitigation sites with unique identifiers within the States NJEMS database that can be tracked independent of the permit.

b.) This change was not 309 driven.

c.) Including wetland mitigation sites both in the State's NJEMS database and as a GIS layer will enable the NJDEP to better track, monitor, and protect those wetlands systems in the future.

Wetland Technical Assistance Outreach and Education

a.) See the Wetlands Phase I Assessment for a detailed discussion of the NJCMP's ongoing work with its partners to provide technical assistance, outreach, and education to coastal communities. In conjunction with Stevens Institute, the NJDEP developed engineering guidelines for living shorelines, hosted an information sharing meeting for living shorelines and coastal restoration efforts, and created a Living Shorelines Working Group to provide cross-coordination with NJDEP programs on restoration efforts prior to projects being submitted for permit review.

b.) Portions of this change were 309 driven.

c.) The NJDEP will continue to work with its partners State-wide to supply technical assistance, including best management practices, on the design and implementation of living shorelines in New Jersey, including technical field assistance and coordination of information and efforts.

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

   Given relatively recent regulatory amendments and grant projects described in the Phase I assessment, it is anticipated that creation of living shorelines and ecologically-based mitigation strategies will significantly increase in the next few years. Once these projects are under way, monitoring and evaluation will occur to determine their effectiveness.

**Identification of Priorities:**

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

*Management Priority 1: Research and Assessment*

a. Research: Support research on the factors and stressors causing changes to New Jersey's wetlands and shorelines.
b. Data Review: Review existing data and conduct data inventory via a data gap analysis.
c. Mapping: Track shoreline and marsh platform changes over time.

*Management Priority 2: Support Ecologically Based Hazard Mitigation Strategies and Pilots*

a. Continue internal, and establish external, living shorelines working groups.
b. Provide technical and compliance assistance to ecologically-based hazard mitigation strategies and pilots in coordination with NJDEP and NJCMP networked programs and various grant partners.
c. Evaluate the feasibility of ecologically-based hazard mitigation strategies for use in vulnerable coastal areas through community outreach efforts and other opportunities, including Blue Acres sites.
d. Develop and coordinate a wetlands and shorelines monitoring program.

*Management Priority 3: Determine need for and pursue if necessary regulatory amendments*

a. Evaluate current regulations to assess if regulatory changes are necessary based on the results of research and assessment activities, and the implementation and monitoring of ecologically-based mitigation strategy pilots.
b. Research, evaluate, and determine best mechanisms and process to provide incentives for ecologically-based mitigation strategy use, monitoring, and maintenance.

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

| Priority Needs | Need? (Y or N) | Brief Explanation of Need/Gap |
|---|---|---|
| Research | Y | Water quality sampling, sediment transplant, cost benefit of ecosystem services |
| Mapping/GIS | Y | Shoreline changes, geomorphic salinity gradient |
| Data and information management | Y | Adopt WQDE, develop web based location for centralized access to monitoring/research and guidance materials |
| Training/capacity building | Y | Establish internal and external living shorelines working groups, development of citizens science monitoring program, additional resources to finance implementation projects, monitoring and research |
| Decision-support tools | Y | Research, revise and adopt metrics for ecological and performance-based evaluation, BMP manual for ecological-based solutions to hazard mitigation, NOAA adopt constraint vertical datum from the CCVAMP |
| Communication and outreach | Y | Information needs to be provided to property owners, communities and potential users on the best use, realistic expectations and value of ecological strategies. |
| Monitoring and | Y | Monitoring and assessment is needed on the status and trends of |

| | | |
|---|---|---|
| Assessment | | coastal wetlands and shorelines. Monitoring is needed to evaluate projects. |

**Enhancement Area Strategy Development**:

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

   Yes __X__
   No _____

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

   As described in the Phase I Assessment, data from NOAA's State of the Coast "Coastal Vulnerability Index", indicated that 42% of the New Jersey coastline is highly vulnerable to shoreline erosion and 98% of the New Jersey coastline is moderate to highly vulnerable to sea level rise. New Jersey has taken steps as outlined above and in the Phase I Assessment to permit, pilot, monitor, and improve the use of ecological strategies for their intrinsic and community resiliency value. However, currently funded projects, regulatory changes and wetland monitoring are initial steps in what is expected to be ongoing work to understand and expand the use of ecologically based mitigation strategies in New Jersey through the NJCMP.

   Additional work as outlined in our management priorities above is needed in several areas for optimal use of ecologically based mitigation strategies in New Jersey. Research such as the extent and condition of our changing coastal wetlands needs to be completed to study the relationships among local conditions, function, and stressor impacts in order to improve overall coastal resource management and project specific ecologically based mitigation strategies. Efforts are underway to pilot and develop guidance for these strategies, but more will need to be done to improve techniques, improve project incentives and the regulatory processes. The NJCMP will continue and expand collaboration efforts with internal programs that have input on permit decisions such as our tidelands and shellfisheries programs and external partners that impact project decisions such as the USACE and USFWS.

# V. Strategies

As noted previously, each strategy must address high priority needs for program enhancement within the enhancement areas that were identified through the assessments. The strategy establishes clear goals and a pathway and method to reach those goals during the next five years. The NJCMP has only developed strategies for activities the state intends to fund and work on given the anticipated level of Section 309 funding.

The NJCMP used the strategy template provided by NOAA for developing the strategies to ensure they include task descriptions, cost estimates, and milestones, as appropriate. Strategies may either address a single high priority enhancement area or cut across several high priority enhancement areas. The strategy template also includes an evaluation component to help assess the overall success of the strategy at achieving its goals.

Strategies must be designed to lead to a program change. However, because of various political and other factors that may be outside the CMP's control, the program change does not necessarily need to be achieved during the five-year assessment and strategy cycle.

Enhancement area strategies include estimated costs, a schedule, and a general work plan listing necessary steps for achieving the strategy goals. Detailed information on annual tasks, budgets, and work products will be determined through the annual award negotiation process.

The NJCMP determined through the Phase I and Phase II Assessments that Strategies would be developed for the Aquaculture, Ocean Resources, and Wetlands enhancement areas, as well as a combined enhancement strategy for Coastal Hazards and Cumulative and Secondary Impacts. The Strategies for each of these enhancement areas follow.

# Aquaculture Strategy

## Supporting growth of the aquaculture industry while protecting coastal resources

### I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(check all that apply)*:

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

### II. Strategy Description

**A.** The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

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

**B. Strategy Goal**

Over the next five years the NJCMP proposes to facilitate the expansion of New Jersey's aquaculture industry by adopting regulatory amendments and revised guidelines which streamline the permitting process, protect shorebird habitat, and designated new aquaculture use areas.

**C.** Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years).

Shellfish aquaculture within New Jersey was historically a means of managing a natural resource. There are many economic benefits to the expansion of the aquaculture industry. The steps outlined below will result in meaningful improvements in coastal resource management:

1. Continue coordination between federal and state agencies, the aquaculture industry, New Jersey Shellfisheries Council, the SAWG, and the AAC to facilitate the refinement of the CZM rules that address shellfish aquaculture and to adopt regulatory amendments to these

rules, as well as revisions to guidelines that appropriately balance the needs of the industry with the NJCMP's mission.

2. Update data and spatial mapping of special areas, specifically special water and special water's edge areas. The resulting information will improve siting of aquaculture facilities both from an industry and coastal resource protection perspective.

## III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

As noted in the Phase I and II Assessments for this enhancement area, New Jersey's aquaculture industry is rapidly evolving from traditional approaches to use of more innovative non-traditional methods. As a result of this rapid evolution, the CZM rules that address aquaculture activities must be reassessed and updated to reflect the changing industry while continuing to protect coastal resources. The SAWG, the Atlantic Coast and Delaware Bay Shellfisheries Councils, and the AAC will assess emerging aquaculture needs while continuing to support the existing industry and recommend regulatory amendments to the CZM rules to facilitate the expansion of the industry in New Jersey. The NJCMP is developing a strategy that augments efforts by the working group and advisory council.

In addition to changes in methods, the Phase I and Phase II Assessments identified significant increases in some aquaculture types. There is general industry-agency agreement that current leaseholds need to be better utilized and following this, new areas need to be identified where aquaculture facilities (specifically, new lease areas) can be sited with minimal impacts to special areas. In order to better manage land use and resource protection through the NJCMP, the establishment of new baseline mapping of special areas, particularly special water areas and special water's edge areas, within New Jersey's coastal zone is proposed. This baseline mapping will greatly improve regulatory management in the coastal zone, while establishing a starting point to conduct future analysis of uses and resources to inform decision making and program/policy development. Improved baseline mapping of special areas has the potential to create opportunities for the identification of new designated shellfish aquaculture use areas where the siting of aquaculture facilities will have minimal impacts to special areas.

## IV. Benefits to CMP

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

The benefits of the 2016-2020 Aquaculture Strategy: Supporting growth of the aquaculture industry while protecting coastal resources, on the NJCMP include:

1. Coordination with other State agencies and stakeholder groups through the SAWG, the Atlantic and Delaware Bay Shellfisheries Councils, and the AAC;
2. The development of regulatory amendments to further streamline the permitting process will enable the NJCMP to more efficiently and appropriately process permits for aquaculture related activities while protecting coastal resources; and

3. The identification of new designated shellfish aquaculture use areas will benefit the NJCMP by clearly identifying the State's special areas in order to make more informed regulatory and permitting decisions.

## V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change and the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

In response to changes within and the expansion of the aquaculture industry, the NJDEP determined that amendments to the coastal rules, and Water Monitoring and Standards Rules and Standards were necessary to retain aquaculture as a viable industry in New Jersey. As discussed in both the Phase I and Phase II Assessments, additional regulatory amendments are needed to continue the support of the industry while protecting coastal resources.

There is a large degree of support for additional regulatory amendments as well as the updating of guidance documents and policies, from all sectors, as evidenced by the robust participation in the SAWG, the Atlantic Coast and Delaware Bay Shellfisheries Councils, and the AAC. These participants include, but are not limited to, shellfish aquaculturists, Rutgers University, Monmouth University, Stockton University, Clean Ocean Action, Baykeeper, the Partnership for the Delaware Estuary, the Barnegat Bay Partnership, NJDOH, NJDA, NJDEP Bureau of Shellfisheries, USACE, NJ Sea Grant Consortium, the Growers Forum and numerous county and local governments.

While the NJCMP does not have authority over all regulations pertaining to aquaculture, the 309 Aquaculture Strategy will be successfully implemented due to its broad support throughout the industry and government and the commitment of the State to react to and support the expansion of the industry while protecting coastal resources.

## VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCRM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

**Strategy Goal**: To facilitate the expansion of the aquaculture industry in New Jersey while maintaining regulatory protections of coastal resources.
**Total Years:** 4
**Total Budget:** $220,000

**Year(s):** 1-2
**Description of activities:** Work with partners to complete updated baseline mapping of special areas initially focusing on shellfish and SAV habitats.
**Major Milestone(s):** Development of updated shellfish and SAV habitat mapping and potential identification of new shellfish aquaculture use areas.
**Budget:** $180,000

**Year(s):** 3-4
**Description of activities:** Participation in public, private, and nonprofit coordination efforts; evaluation of information resulting from the baseline mapping; and assessment of potential industry impacts on threatened species, in order to further refine the NJCMP's enforceable policies through the adoption of regulatory amendments to the CZM rules.
**Major Milestone(s):** Develop regulatory amendments to the CZM rules concerning shellfish aquaculture. The regulatory amendments will be informed by the shellfish habitat and SAV baseline mapping conducted in years 1 and 2**.**
**Budget:** $40,000

## VII. Fiscal and Technical Needs

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.

In an effort to evaluate potential impacts of shellfish aquaculture activities on the Red Knot, the NJDEP Bureau of Shellfisheries and Endangered and Nongame Species Program are funding a research study which began in spring 2015. The study is designed to research the effects of oyster aquaculture on foraging shorebirds on the Delaware Bay. The information obtained from this study will inform the development of appropriate and effective protective measures for Red Knots, including regulatory amendments.

Stockton University, NJDEP Bureau of Shellfisheries, and NJCMP proposed a project to the NJ Sea Grant Consortium to fund research on special area mapping entitled: Establishing valid remote sensing and onsite sampling protocols that can be used to create regional mapping of shellfish and SAV habitats and valid onsite sampling protocols to investigate the occurrence of local populations of shellfish and SAV in New Jersey's coastal zone. This project was not awarded funding, making this strategy even more important.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

DEP may require additional research and/or technical support (and funding) to assess the impacts of the aquaculture industry on coastal resources, such as, but not limited to evaluation of information resulting from the baseline mapping and assessment of potential industry impacts on threatened species.

## VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

No specific Project of Special Merit is known at this time.

***5-Year Budget Summary***
**Aquaculture Strategy**
**Supporting growth of the aquaculture industry while protecting coastal resources**

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

| **Strategy Activities** | **Year 1 Funding** | **Year 2 Funding** | **Year 3 Funding** | **Year 4 Funding** | **Year 5 Funding** | **Total Funding** |
|---|---|---|---|---|---|---|
| Special area mapping | $90,000 | $90,000 | | | | **$180,000** |
| New aquaculture policies and regulatory recommendations | | | $20,000 | $20,000 | | **$40,000** |
| **Total Funding** | **$90,000** | **$90,000** | **$20,000** | **$20,000** | | **$220,000** |

# Coastal Hazards & Cumulative and Secondary Impacts Integrated Strategy

## Resilient and Sustainable Coastal Communities

### I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(check all that apply)*:

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

### II. Strategy Description

**A.** The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

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

**B. Strategy Goal**

State the goal of the strategy for the five-year assessment period. The goal should be the specific program change to be achieved or be a statement describing the results of the project with the expectation that achieving the goal would eventually lead to a program change. For strategies that implement an existing program change, the goal should be a specific implementation milestone.

Goal: Develop a Sustainable and Resilient Coastal Communities program representing a balanced process and guidelines which informs local land use planning by encouraging sustainable economic growth, protects coastal resources, and minimizes risks to coastal hazards.

1. Comprehensive Planning
   The NJCMP seeks to integrate the Sustainable Coastal Communities (2011-2015 Strategy) and RCCI (see Coastal Hazards Assessment) into a single comprehensive program addressing cumulative and secondary impacts and coastal hazards at the municipal level. This strategy will focus on development of policies and best management practices, as well as implementation of strategies, that reduce cumulative impacts, risk, and vulnerability to coastal hazards.

2. Coastal Features Mapping/Data Collection
   Mapping of coastal resources and land use land cover changes is critical to the identification, and monitoring, of cumulative and secondary impacts. In order to better manage land use and resource protection, it is necessary to baseline the current status of New Jersey's coastal resources. It is proposed that a project be undertaken that results in mapping of lands and waters that are identified in the CMP as Special Areas.

3. Develop guidelines, procedures, and policy document implementing a Sustainable and Resilient Coastal Communities Program. .

**C.** Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.

The NJCMP will continue to implement its current cumulative and secondary impacts strategy – Sustainable Communities – of working with coastal communities to identify and plan for growth in appropriate locations as provided in the CZM rules. The NJCMP will also continue to implement the coastal hazards strategy of establishing a Resilient Coastal Communities program through multiple ongoing efforts. These implementation efforts will include the development of tools and guidance for municipalities, education and outreach activities that communicate the guidance and information, and close coordination with the NJCMP partner academic institutions, non-profit organizations, and regional agencies.

In order to appropriately plan for and evaluate cumulative and secondary impacts and vulnerabilities to coastal hazards, updated mapping of coastal resources is needed. Creating a set of baseline mapping of special areas will greatly improve the regulatory management of our State's coastal areas and also establish a starting point for conducting future analysis of uses and resources to inform decision making and program/policy development.

Through this strategy, the NJCMP intends to develop a comprehensive planning program that integrates multiple planning efforts to address the impacts from coastal hazards and protection of coastal resources. The planning process employed through this program will result in guidelines, procedures, and policy documents implementing a Sustainable and Resilient Coastal Communities Program that support, and are consistent with, the goals of the NJCMP. The NJCMP anticipates that this comprehensive planning approach and program will inform future changes to the CZM rules.

## III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

As expressed in the Phase I and II Assessments, New Jersey continues to experience pressure for land use change in the coastal region. There is a need to better inform local land use planning to maintain the significant economic and tourism value of our coastal area while minimizing the conversion of habitat and reducing water quality impacts. In addition, New Jersey coastal communities are not adequately prepared for increasing threats from coastal hazards such as rising sea level and more frequent storm

events. There is neither a sufficient understanding of, nor guidance on, impacts of long-term coastal hazards and secondary and cumulative impacts on coastal resources and the built environment.

This combined strategy will develop appropriate growth management strategies, effective resource protection methods, and resiliency planning and practices for coastal communities. In addition, the updated data and baseline special area mapping will provide a foundation on which to build this planning process.

## IV. Benefits to Coastal Management

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

New Jersey's coastal communities will receive guidance and technical assistance on effective tools and practices that will enable them to make better policy decisions. This will reduce impacts on coastal resources, coastal communities, and the economy.

## V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change and the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

The NJCMP continues to actively participate in planning initiatives related to sustainable coastal communities, most notably the Sustainable Jersey Program and implementation of the State Plan. NJCMP staff also represents the NJDEP in the State Planning process, which includes the Plan Endorsement process, a multi-agency planning coordination process previously detailed in the Phase II Assessment. The NJCMP has also been successful in securing federal awards to develop resiliency planning tools, processes, and guidance. These awards also provide coastal communities with planning and technical assistance, as well as the development of multiple ecological resiliency projects. These projects have also enhanced the NJCMP's partnerships with academic institutions and other NGOs, resulting in an active network on partners working together on these issues. As such, the NJCMP has developed a strong foundation on which to build a Sustainable and Resilient Coastal Communities program.

## VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCRM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

**Strategy Goal:** Develop a Sustainable and Resilient Coastal Communities program representing a balanced process and guidelines which informs local land use planning by encouraging sustainable economic growth, protects coastal resources, and minimizes risks to coastal hazards.
**Total Years:** 5
**Total Budget:** $1,370,000

**Year(s):** 1 – 2
**Description of activities:** The NJCMP will identify a methodology and procedure for updating existing mapping of certain coastal resources and special areas, as well as beginning the mapping of these resources and areas. Generally, these areas are discrete geographic features, areas, or sites that encompass specific geomorphological conditions, hazardous locations, important infrastructure, and/or habitats. Updated baseline mapping of special areas improves the regulatory management of New Jersey's coastal zone and establishes a starting point to conduct future analysis of uses and resources to inform decision making and program/policy development.

The NJCMP has a number of ongoing resiliency and sustainable community activities that will end immediately prior to, or at the start of, 2016 including the RCCI, S+RCC pilots, and development of municipal Coastal Vulnerability Assessments. The NJCMP will evaluate the conclusion of those efforts and the special area mapping process to develop a recommendation report for a comprehensive planning program.

**Major Milestone(s):**
- Identification of coastal resource and Special Area mapping methodologies and procedures;
- Updated coastal resource and Special Area mapping;
- White paper recommending procedures and criteria for a comprehensive Sustainable and Resilient Coastal Communities planning program to guide pilot projects.

**Budget:** $450,000

**Year(s):** 3-5
**Description of activities:** The NJCMP will work with a number of coastal communities to pilot the recommendations in the Sustainable and Resilient Coastal Communities planning program white paper. The new/updated coastal resource/Special Area mapping that occurred during years 1 and 2 will be used to guide the resource protection aspects of the pilots.
**Major Milestone(s):**
- Request for Proposals for Sustainable and Resilient Coastal Communities planning program municipal pilot projects;
- Completion of Sustainable and Resilient Coastal Communities planning program municipal pilot projects.

**Budget:** $900,000

**Year(s):** 5
**Description of activities:** The NJCMP will evaluate the results of the pilot projects resulting in the development of new guidelines, procedures, and policies to implement a Sustainable and Resilient Coastal Communities Program.
**Major Milestone(s):**
- Municipal pilot project evaluation report;
- Guidelines, procedures, and policy document implementing a Sustainable and Resilient Coastal Communities Program. To include identification and recommendations for program/regulatory changes.

**Budget:** $20,000

## VII. Fiscal and Technical Needs

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.

Expected levels of Section 309 funding will be sufficient to carry out pilots of this proposed strategy. Based on the current S+RCC pilot project (funded by CZM grants), each pilot project is projected to cost approximately $150,000 per community. This proposed strategy, and projected budget, will allow pilots in approximately 6 additional communities. This number of communities, in addition to the three S+RCC pilots currently funded, is adequate to base findings. The NJCMP will pursue federal and any other funding opportunities as may arise to fund additional pilot projects, as necessary.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

The NJCMP possess the technical knowledge, skills and equipment to carry out the proposed strategy, working with its partner academic institutions, non-governmental organizations, and other state and federal agencies to supplement the technical skill set required to complete this strategy.

## VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

The NJCMP proposes that a project of special merit will be submitted in order to increase the number of coastal communities that may be included as pilot projects.

***5-Year Budget Summary***
**Coastal Hazards & Cumulative and Secondary Impacts Integrated Strategy**
**Resilient and Sustainable Coastal Communities**

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

| Strategy Activities | Year 1 Funding | Year 2 Funding | Year 3 Funding | Year 4 Funding | Year 5 Funding | Total Funding |
|---|---|---|---|---|---|---|
| Coastal resource/Special Area mapping | $225,000 | $225,000 | | | | **$450,000** |

| | | | | | | |
|---|---|---|---|---|---|---|
| SRCC Pilot Program | | | $300,000 | $300,000 | $300,000 | **$900,000** |
| Program change recs | | | | | $20,000 | **$20,000** |
| **Total Funding** | **$225,000** | **$225,000** | **$300,000** | **$300,000** | **$320,000** | **$1,370,000** |

# Ocean Resources Strategy

## Completing and Implementing a Mid-Atlantic Region Ocean Plan

### I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(check all that apply)*:

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

### II. Strategy Description

**A.** The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

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

**B. Strategy Goal**

State the goal of the strategy for the five-year assessment period. The goal should be the specific program change to be achieved or be a statement describing the results of the project with the expectation that achieving the goal would eventually lead to a program change. For strategies that implement an existing program change, the goal should be a specific implementation milestone. For example, work with three communities to develop revised draft comprehensive plans that consider future sea level rise or, based on research and policy analysis, present proposed legislation on wetland buffers to state legislature or consideration. Rather than a lofty statement, the goal should be achievable within the time frame of the strategy.

The NJCMP will continue to participate in MARCO and the Mid-Atlantic RPB to gather information and data that improves ocean planning, resource protection, and sustainable uses. The goals of this strategy is the development of new or revised guidelines, procedures, and policy documents through, or parallel with, the Mid-Atlantic RPB's regional planning process that lead to updated and/or enhanced memoranda of agreement/understanding that could be formally adopted by the NJCMP, other Mid-Atlantic states, and federal agencies that could result in meaningful improvements in coastal resource management.

**C.** Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

The NJCMP will continue to focus attention on ocean resources management. This includes the continuation of efforts with MARCO, the Mid-Atlantic RPB, and federal agencies to advance ocean planning. Parallel with those efforts, the NJCMP will identify New Jersey-specific ocean resource and use interests, fill data and information gaps, and ensure New Jersey's interests are addressed within the Regional Ocean Plan and plan implementation.

As stated previously, the Mid-Atlantic RPB was established in 2013 in keeping with the National Ocean Policy. The RPB's mission is to carry out coordinated efforts to address current challenges and emerging opportunities through a collaborative process among federal, state, tribal, and MAFMC representatives in consultation with stakeholders. The RPB's activities are designed to help guide resource conservation and economic development by facilitating information sharing, fostering collaboration, and improving decision-making about a growing number of ocean uses.

A key objective of the ocean planning process in the Mid-Atlantic region is to help member entities work better together to achieve two goals:

1. Promote ocean ecosystem health, functionality, and integrity through conservation, protection, enhancement, and restoration; and
2. Plan and provide for existing and emerging ocean uses in a sustainable manner that minimizes conflicts, improves effectiveness and regulatory predictability, and supports economic growth.

Inter-jurisdictional coordination (IJC) is a critical component of the planning process and addresses specific processes and mechanisms that will allow the federal, state, and tribal member institutions of the RPB to better coordinate, leverage resources, and make better decisions that benefit ocean users and ecosystem health through the implementation of their existing mandates and authorities. The RPB has established a workgroup focused on IJC and has directed that workgroup to engage in conversations with individual member entities and key stakeholders to identify opportunities to improve inter-jurisdictional coordination related to three basic categories:

- Informing and improving management decisions;
- Improving information for environmental and regulatory review; and
- Identifying research needs.

The RPB aims to have a fully-approved OAP by end of 2016. The Mid-Atlantic RPB identified several next steps to achieve that goal, including the continuation and/or establishment of three workgroups discussed at the meeting:

1. IJC: identifying short and long-term region-wide and geographically-specific opportunities and actions, using the working criteria discussed as touchstones
2. Data synthesis: reviewing existing methodologies for ecological and economic analyses the RPB could pursue and make a recommendation on one or more analyses to undertake to inform the development of the OAP in the short and longer terms
3. ROA: crafting a white paper to describe what is important and special about the Mid-Atlantic ocean, including a rationale for regional ocean planning, and potentially revisiting the population of the full ROA at a later date

To address this new era of ocean challenges and opportunities, the Governors of New York, New Jersey, Delaware, Maryland, and Virginia in 2009 signed the Mid-Atlantic Governors' Agreement on Ocean Conservation. The Agreement established the Mid-Atlantic Regional Council on the Ocean (MARCO) as a partnership to address shared regional priorities and provide a collective voice.

The agreement identified four regional priorities for shared action to improve ocean health and contribute to the high quality of life and economic vitality of the region:

1. Climate Change Adaptation- Helping communities prepare for the impacts of climate change on community infrastructure and coastal and ocean resources.
2. Renewable Energy-Collaborating on a regional approach to support the sustainable development of renewable energy in offshore areas.
3. Marine Habitats-Coordinating the protection of important marine habitats, including sensitive and unique offshore areas such as corals, canyons and migration corridors.
4. Water Quality-Promoting improvements in ocean water quality.

MARCO uses regional ocean planning as a means to advance priorities identified in the agreement. Ocean planning is a process to improve understanding of how ocean resources and places are being used, managed, and conserved, and to establish a common foundation that will guide actions to address the shared regional priorities.

MARCO leverages existing state and federal resources, knowledge, and partnerships to build a stronger base of information and experience to make well-informed decisions in the best interest of the states and their constituents. MARCO provides the states with expanded capacity to address pressing management challenges to improve ocean health, achieve sustainable use of ocean spaces and resources, and grow the vital ocean-based economy.

In addition to continued participation in MARCO and the Mid-Atlantic RPB, the NJCMP will seek to define New Jersey-specific ocean resource objectives, seek to ensure those objectives are addressed in regional planning efforts, and augment existing data on New Jersey ocean resources and potential siting of uses.

## III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

| **Priority Needs from the Ocean Resources Assessment** | **Need?** (Y or N) | **Brief Explanation of Need/Gap** | **How the strategy addresses the gap** |
|---|---|---|---|
| Research | Y | There is a need to increase research on compatibility of ocean use and marine resources. | An aim of the RPB is to identify and seek funding for research that accomplishes Mid-Atlantic Ocean Planning and resource management need. |
| | | | |

| | | | |
|---|---|---|---|
| Mapping/GIS | Y | There is a need to map high value resource areas and areas more appropriate for ocean uses. | MARCO hosts a portal of regional ocean resource and use data/mapping and continues to seek new information. NJ will seek funding to collect information on NJ offshore ocean resources and uses data collection. |
| Data and information management | Y | Data is needed to inform the research and mapping needs above and to inform management decisions. | MARCO hosts a portal of regional ocean resource and use data/mapping and continues to seek new information. The data synthesis working group working under the RPB and with MARCO states and resources plans to evaluate and assess regional ocean use and resource information data. |
| Decision-support tools | Y | There is a need to improve coordination and communication between federal and state agencies with interest and decision making power over ocean resources and uses. | The IJC working group under the RPB will identify key issue areas where Federal and State agencies can pilot improved coordination and decision making processes for ocean resources and uses. |
| Communication and outreach | Y | Stakeholders expressed a desire to be better informed and involved in ocean resource and use decisions. | The RBP and MARCO meetings, websites and work groups provide a forum to inform and engage key stakeholders. However, there is a need for the NJCMP to better solicit and understand the broad array of New Jersey-specific ocean resource interests. |

## IV. Benefits to Coastal Management

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

The NJCMP will benefit from continued participation in MARCO and the Mid-Atlantic RPB by leveraging resources with other states and federal agencies on ocean resource and use data collection and research. An outcome of the Mid-Atlantic RPB work is to improve federal and state communication and decision making processes under existing ocean resource and use programs. Collecting additional Ocean resource data, better understanding the broad array of New Jersey stakeholder interests, and seeking to ensure they are addressed in regional planning efforts will benefit the NJCMP.

## V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change and the specific actions the state or territory

will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

The NJCMP continues to be active in the MARCO and Mid-Atlantic RPB processes and receives strong support for development of a regional ocean plan from both the NJDEP and external stakeholders. New Jersey seeks to improve its effectiveness in addressing federal consistency issues. The need to improve our federal consistency process provides motivation for improved MOUs and the NJCMP's involvement in development in the regional ocean plan.

## VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCRM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

**Strategy Goal:** NJCMP will develop new or revised guidelines, procedures, and/or policy documents through, or parallel with, the Mid-Atlantic RPB's regional planning process that lead to updated or enhanced memoranda of agreement/understanding that could be formally adopted by the NJCMP, other Mid-Atlantic states, and federal agencies that result in meaningful improvements in coastal resource management.
**Total Years:** 5
**Total Budget:** $285,000

**Years:** 1-5
**Description of activities:** The NJCMP will identify and facilitate the collection of ocean resource and use data filling gaps in our knowledge. This data will inform the following tasks in this strategy.
**Major Milestone(s):** Obtain resources and partnerships that enable the collection of ocean resource and use information.
**Budget:** $70,000

**Year(s):** 1-2
**Description of activities**: Identify New Jersey-specific ocean resource and use interests and work to ensure these interests are addressed in MARCO and the Mid-Atlantic RPB regional ocean planning efforts.
**Major Milestone(s):** Development of a policy paper identifying New Jersey-specific ocean resource interests.
**Budget:** $40,000
**Years:** 1-5
**Description of activities**: The NJCMP will evaluate the Mid-Atlantic RPB Regional Ocean Plan, and implementation of that plan, and identify opportunities to improve inter-jurisdictional coordination and decision-making consistent with New Jersey interests.

**Major Milestone(s):** Review, comment, and participation in the development and implementation of the Mid-Atlantic RPB Regional Ocean Plan identifying and taking advantage of opportunities to improve inter-jurisdictional coordination and decision-making through improved guidelines and/or procedures while ensuring that New Jersey-specific interests and issues are appropriately addressed.
**Budget:** $85,000

**Years:** 4-5
**Description of activities**: The NJCMP will develop and implement inter-jurisdictional coordination and decision-making through products such as memoranda of agreement consistent with New Jersey's interests.
**Major Milestone(s):** Development and execution of memoranda of agreements or other documents establishing improved processes with applicable agencies.
**Budget:** $70,000

## VII. Fiscal and Technical Needs

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.

The NJCMP seeks to leverage multi-jurisdictional processes to produce the region-wide tools and documents on which to base New Jersey-specific ocean resource policies. The NJCMP is also reliant on the cooperation of federal and regional agencies for the successful development of agreements.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

The State and its partners possess the technical knowledge, skills, and equipment to carry out the strategy.

## VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

No specific Project of Special Merit is known at this time.

***5-Year Budget Summary***
**Ocean Resources Strategy**
**Completing and Implementing a Mid-Atlantic Region Ocean Plan**

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

| **Strategy Activities** | **Year 1 Funding** | **Year 2 Funding** | **Year 3 Funding** | **Year 4 Funding** | **Year 5 Funding** | **Total Funding** |
|---|---|---|---|---|---|---|
| Data development | $15,000 | $15,000 | $20,000 | $10,000 | $10,000 | **$70,000** |
| NJ-specific interests | $20,000 | $20,000 | | | | **$40,000** |
| Regional Ocean Plan | $15,000 | $15,000 | $25,000 | $15,000 | $15,000 | **$85,000** |
| MOUs | | | | $45,000 | $45,000 | **$90,000** |
| **Total Funding** | **$50,000** | **$50,000** | **$45,000** | **$70,000** | **$70,000** | **$285,000** |

# Wetlands Strategy

## Expanding Effective Use of Ecologically Based Hazard Mitigation Strategies

### I. Issue Area(s)

The proposed strategy or implementation activities will support the following high-priority enhancement areas *(check all that apply)*:

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

### II. Strategy Description

**A.** The proposed strategy will lead to, or implement, the following types of program changes *(check all that apply):*

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

**B. Strategy Goal**

State the goal of the strategy for the five-year assessment period. The goal should be the specific program change to be achieved or be a statement describing the results of the project with the expectation that achieving the goal would eventually lead to a program change. For strategies that implement an existing program change, the goal should be a specific implementation milestone.

Goal: Support expanded and effective use of ecologically-based mitigation strategies through implementation of the following steps:

1. Facilitation of Ecologically-Based Hazard Mitigation Strategies
   The NJCMP will encourage the use of living shoreline/wetlands restoration projects through community advocacy and by providing assistance with design, implementation, and permitting. The NJCMP will facilitate discussions between regulatory authorities, the private sector, property owners, and partners through internal and external stakeholder committees. Information collected from the NJCMP's stakeholder outreach and pilot projects will inform regulatory changes.

2. Monitor and Assess the efficacy of ecologically based mitigation strategies
   The NJCMP, working with its partners, will support research and monitoring of pilot projects and establish measures and metrics designed to track project successes/shortcomings. A citizen scientists monitoring program will be established, including development of an internal data repository and an external webpage will be created to provide stakeholders (internal and external) with data and monitoring information on the pilot projects. The NJCMP will adopt and guidelines and protocols to implement this program.

3. Regulatory Amendments
   Based upon data collected through the performance evaluation/monitoring of the ecologically-based mitigation strategies pilots and community engagement, the NJCMP will make recommendations for program changes to multiple NJDEP programs, as appropriate, such as revisions to coastal land acquisition and restoration incentives and prioritization, revisions to project-specific regulatory requirements, and modifications to NJDEP policy to address regional versus site-specific approaches.

**C.** Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

The impacts to portions of the State's coastal area from Superstorm Sandy and the historic rate of sea level rise have focused attention on impacts to and the value of New Jersey's coastal wetlands. In the coming years, storm events coupled with sea level rise and land subsidence are anticipated to further exacerbate storm surges, tidal flooding, shoreline erosion and loss of habitat and coastal wetlands. To address these threats, the State is encouraging the use of ecologically-based hazard mitigation strategies that are intended to slow or stop loss of coastal wetlands, restore, enhance and/or protect habitat and afford protection to developed shorelines.

As a result of the 2011 -2016 Wetlands Strategy work plan outcomes, the NJDEP modified the coastal general permit for habitat creation and enhancement as well as the CZM rules to facilitate the establishment of living shorelines. Through these regulatory amendments, the NJDEP is supporting the implementation of ecologically-based mitigation strategies within the next two to three years. Implementation projects will be monitored and program processes evaluated to determine where additional regulatory and program changes are needed to encourage effective use of ecologically based mitigation strategies.

## III. Needs and Gaps Addressed

Identify what priority needs and gaps the strategy addresses and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

The 309 Wetlands Phase II Assessment indicated that erosion of tidal marsh edge and interior marsh, impacts of sea level rise and storm surge, lack of buffers for coastal wetland migration, and impacts to coastal ecosystems and habitats are the key issues for the 309 Wetlands Assessment and Strategy 2016 – 2020.

Using data from NOAA's State of the Coast "Coastal Vulnerability Index", 42% of the New Jersey coastline in highly vulnerable to shoreline erosion and 98% of our coastline is moderate to highly vulnerable to sea level rise.

According to New Jersey 2012 Land Use/Land Cover data (LU/LC), there were 857,672 acres of wetlands (both salt and freshwater) in New Jersey coastal counties in 2012. Between 2007 and 2012 the State had a 0.29% net loss of wetlands in those coastal counties, including a 0.12% net gain in saltwater wetlands.[61] Additionally, the New Jersey 2012 LU/LC data for those coastal counties, between 2007 and 2012, indicates the following:

- 2.58 square miles of wetlands were converted to development;
- 2.89 square miles of wetlands were converted to water; and
- 2.17 square miles of wetlands were converted to barren land.

Though preliminary statistical information is available, there are significant gaps related to coastal wetlands and shorelines in the following categories:

- Research: Water quality sampling, sediment transport, ecosystem services, cost/benefit analyses;
- Data Review: Review existing data and conduct data inventory via a data gap analysis (this is an ongoing task);
- Mapping: Shoreline and marsh platform erosional changes over time; hardened shoreline inventory, salinity gradient, coastal elevations, and bathometry for all bays and up into the tidal portion of the Delaware River are needed;
- Data Management: Create internal data repository and share pertinent data with the NJ Data Exchange state and/or USEPA WXQ when appropriate;
- Communication and Outreach: Increased communications and educational outreach with coastal communities on new and improved data is needed;
- Monitoring and Assessment: Additional funding and increased resources needed for existing wetlands monitoring programs like MACWA, Marsh Futures, EPA's Rapid Wetlands Assessment, the State-wide Wetlands Monitoring Program, a pilot monitoring program using citizen science for crowd sourcing data collection, and funding for performance and habitat monitoring as well as interpretive analysis of existing data from USGS and other partners.
- Evaluation Tools and Metrics: Ecologically based hazard mitigation strategy evaluation tools and metrics are needed for applicants and internal NJDEP review teams to document initial feedback for proposed coastal restoration/living shorelines projects.

The NJCMP Wetlands Strategy is designed to address some of the key issues and gaps by encouraging ecologically-based hazard mitigation strategy implementation. Monitoring project performance and continued coordination and collaboration with stakeholders that will help document additional regulatory and programmatic changes necessary as the program develops.

[61] The acreage figures cited are based upon a comparison of Land Use /Land cover types complied by NJDEP in 2007 and 2012 using GIS mapping. Due to changes in photo interpretation mapping protocols, the time of the baseline photo-imagery, tidal forces and land use practices, some areas mapped in 2007 as falling within a cover type have been remapped as a different cover type. Additionally it is noted that the NJDEP's wetland mapping is used for guidance and does not reflect jurisdictionally verified wetland boundaries. As a result, the changes noted in the extent of wetlands by this mapping may not accurately reflect changes enabled by permitted activities, which are based upon onsite wetland delineation determinations.

## IV. Benefits to Coastal Management

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

Based on the 2010 U.S. Census, over 7.9 million people in New Jersey live in vulnerable coastline areas which are at high or very high risk to coastal erosion. For example, a projection of a Category 1 storm surge using New Jersey's Coastal Vulnerability Index mapping shows over 550,000 acres as highly vulnerable to coastal storm hazards. As documented by a number of recent studies, New Jersey's coastal area is facing increasing risk of wetland shoreline loss and threats to the developed shoreline from rising waters and storm events.

## V. Likelihood of Success

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change and the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

In response to Superstorm Sandy, the NJDEP determined that changes to the Flood Hazard Area Control Act Rules and coastal rules were necessary in view of the significant adverse impacts to coastal wetlands resulting from the storm. Changes to the coastal rules intended to facilitate the expeditious rebuilding of more resilient coastal communities and coastal-related industries, and help facilitate the recovery of the coastal ecosystem were successfully completed and allow for the enhancement of coastal wetlands and living shorelines.

In addition to the regulatory and programmatic changes that are vital to a robust living shoreline and coastal wetland restoration program, the NJCMP has received, created, and partnered on various grants to address the data and processes needed to identify and promote appropriate responses to coastal hazards along New Jersey's shorelines. These grants are coordinated to support research of physical conditions and their assessments, best management practices for planning and implementation, and effective program elements to inform NJCMP's work. The work under the Wetlands 309 Strategy will support ecologically-based hazard mitigation strategy implementation and assist in the development of tools necessary for the RCCI program described under the Coastal Hazards 309 Strategy. In combination, the regulatory changes and the partnerships developed are anticipated to assure success of the Wetlands strategy.

The NJDEP is successfully implementing the following initiatives that the Wetlands 309 Strategy will inform and/or be coordinated with:

- New Jersey Resilient Coastal Communities Initiative;
- Flood Hazard Risk Reduction Measures Grant Program;
- Hazard Mitigation Grant Program (HMGP) residential flood-elevation program;
- Blue Acres Program;
- Partnership with the New Jersey Environmental Infrastructure Trust;
- Building Ecological Solutions to Coastal Communities Hazards Grant;
- Statewide Living Shorelines and Coastal Restoration Committee; and
- The Nature Conservancy and NFWF partners.

## VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

**Strategy Goal:** Support restoration of coastal shorelines and marshes, and expanded and effective use of ecologically-based hazard mitigation, by implementing, monitoring and evaluating pilot projects as well as identifying of living shoreline program improvements and regulatory amendments where necessary.
**Total Years:** 5
**Total Budget:** $500,000

**Year(s):** 1-3
**Description of activities:** Research and Assessment

- Support research into the factors and stressors causing changes to New Jersey's wetlands and shorelines.
- Review existing data and conduct data inventory via a data gap analysis.
- Document shoreline and marsh platform changes over time to assist in the evaluation of the selected restoration strategy.
- Based on the above research and assessments, determine the need for new and improved ecological techniques and policies that support the restoration of New Jersey's coastal shorelines and marshes.

**Budget**: $270,000

**Year(s):** 1-5
**Description of activities:** Support Ecologically Based Hazard Mitigation Strategies and Pilots

- Continue internal, and establish external, living shorelines working groups;
- Provide technical and compliance assistance to ecologically-based hazard mitigation strategies and pilots in coordination with NJDEP and NJCMP networked programs and its various grant partners;
- Evaluate the feasibility of ecologically-based hazard mitigation strategies for use in vulnerable coastal areas through community outreach efforts and other opportunities;
- Develop and coordinate a monitoring program for pilots.

**Budget**: $190,000

**Year(s):** 4-5
**Description of activities:** Adopt living shoreline program, policy, and/or regulatory changes that reflect the knowledge learned from implementing the various pilot projects.

- Evaluate current regulations and restoration and acquisition programs to assess where changes are necessary based on the results of research and assessment activities conducted in

years 1 through 4, and the implementation and monitoring of ecologically-based mitigation strategy pilots.

- Research, evaluate, and determine best mechanisms and process to provide incentives for ecologically based mitigation strategy use, monitoring, and maintenance that will inform regulatory and living shoreline program changes.

**Budget:** $40,000

## VII. Fiscal and Technical Needs

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.

Section 309 funding supports, but is not sufficient, to cover research, assessment, piloting, and evaluation of ecologically based hazard mitigation strategies. Additional grants, incentives, and other financial resources will be sought to implement this strategy.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

The NJCMP is working with stakeholders such at the PDE to support research and assessment of shorelines and marshes. The NJCMP has had initial discussions with additional stakeholders and plans to expand efforts to identify and fill gaps in research and assessment of shorelines and marshes.

## VIII. Projects of Special Merit (Optional)

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

No specific Project of Special Merit is known at this time.

***5-Year Budget Summary***
**Wetlands Strategy**
**Expanding Effective Use of Ecologically Based Hazard Mitigation Strategies**

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

| Strategy Title | Year 1 Funding | Year 2 Funding | Year 3 Funding | Year 4 Funding | Year 5 Funding | Total Funding |
|---|---|---|---|---|---|---|
| Research and Assessment | $90,000 | $90,000 | $90,000 | | | **$270,000** |
| Support EBHM Strategies and Pilots | $20,000 | $20,000 | $20,000 | $65,000 | $65,000 | **$190,000** |
| Identify Recommendations | | | | $20,000 | $20,000 | **$40,000** |
| **Total Funding** | **$95,000** | **$95,000** | **$95,000** | **$115,000** | **$115,000** | **$500,000** |

***5-Year Budget Summary Totals***

Following is budget table summarizing the NJCMP's anticipated Section 309 expenses by strategy for each year. Detailed information can be found within each Strategy, above.

| Strategy | Year 1 Funding | Year 2 Funding | Year 3 Funding | Year 4 Funding | Year 5 Funding | Total Funding |
|---|---|---|---|---|---|---|
| Aquaculture | $90,000 | $90,000 | $20,000 | $20,000 | $0 | **$220,000** |
| C&SI and Coastal Hazards | $225,000 | $225,000 | $300,000 | $300,000 | $320,000 | **$1,370,000** |
| Ocean Planning | $50,000 | $50,000 | $45,000 | $70,000 | $70,000 | **$285,000** |
| Wetlands | $110,000 | $110,000 | $110,000 | $85,000 | $85,000 | **$500,000** |
| **Total Funding** | **$475,000** | **$475,000** | **$475,000** | **$475,000** | **$475,000** | **$2,375,000** |

# VI. Stakeholder and Public Engagement

The CZMA and NJCMP place a strong emphasis on public participation and encourages the participation, coordination, and cooperation with and among appropriate local, state, federal, and regional groups to help carry out the goals of the CZMA. In keeping with the intent of the CZMA, the assessment and strategy is a public document. The NJCMP provided multiple opportunities for key stakeholders and the public to be engaged in and help inform the development of the assessment and strategy, including review of this document.

## Stakeholder Engagement

At the beginning of the assessment and strategy development process, the NJCMP identified key internal and external stakeholder groups. The stakeholders provided feedback on what they felt were the high priority enhancement areas for the state's or territory's coastal zone, the critical problems related to those priority areas, and the greatest opportunities for the NJCMP to strengthen and enhance its program to more effectively address those problems. This ensures that the priorities and needs proposed in the assessment and strategy reflect more than just NJCMP staff opinions.

Internal stakeholders were engaged first as the 2016-2020 309 Assessment and Strategy development process was initiated. Workgroup meetings were held with applicable programs within the NJDEP on each potential enhancement area. Information was gathered through this process including cross program priorities, data needs, and potential enhancement area strategies.

Following is a brief summary of external stakeholder input, the process to gather that input, and any common (or perhaps some divergent) ideas and priorities that emerged. The stakeholder groups that were invited to participate are identified in Appendix A. The NJCMP used the stakeholder feedback to support assessment conclusions, why or why not a particular enhancement area should (or should not) be a priority for the state, and why a particular strategy is needed.

External Stakeholder Engagement

To effectively and efficiently engage a larger number of external stakeholders, the New Jersey CMP utilized an online survey to gather stakeholder input across the nine enhancement areas. The external stakeholders identified in Appendix A were invited to participate in the survey. A summary of the survey responses can be found in Appendix B.

The NJCMP found that the external stakeholder survey responses closely aligned with the assessments and internal stakeholder process results and program expectations. This input was considered in the identification and development, and referenced in, the Phase II Assessments.

Upon completion of the Phase II In-Depth Assessments, the NJCMP organized an External Stakeholder Workshop on February 12, 2015 to discuss the findings of the assessments and to engage the external stakeholders in the development of 309 Assessment Strategies. All external stakeholders identified in Appendix A were invited. This input was considered in the prioritization development of enhancement strategies. A summary of stakeholders' comments from this meeting is available upon request.

## Public Participation

General public participation in the assessment and strategy process was provided through review and comment on a draft of this document. The NJCMP provided public notice, made the assessment and strategy document publically available, and ensured that a minimum 30-day public comment period was provided. The NJCMP made clarifying modifications to this document in response to the public comments provided. The NJCMP made additional modifications to this document to update and clarify language. A summary of public comments is available upon request.

# VII. Appendices

## APPENDIX A - Invited External Stakeholders

Trade Groups

Marc Zitter

Greg DiDomenico
Garden State Seafood Association

Jeff Reichle
Lund's Fisheries
Member of Coast and Ocean Protection Council

Melissa Danko
Executive Director
Marine Trades Association of New Jersey

Mike Cerra
NJ League of Municipalities
Director, Government Affairs

Charles Latini Jr., PP, AICP
American Planning Association
NJ Chapter (APA-NJ)

Craig Wenger, Chair
NJ Association of Floodplain Managers

Environmental/NGO/Academic

NJ Climate Adaptation Alliance, Rutgers University
Jeanne Herb, Associate Director
Edward J. Bloustein School of Planning and Public Policy

Sustainable Jersey/NJ Resiliency Network
Linda Webber
Chris Badurek
Marney Kimmel

NJ Sea Grant Consortium
Lisa Calvo
Mike Danko
Jon Miller

Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA)
Richard Lathrop
Professor of Environmental Monitoring

Rutgers Haskin Shellfish Laboratory
David Bushek, Director

Emile DeVito
NJ Conservation Foundation
Roland Lewis
Metropolitan Waterfront Alliance

Stewart Farrell
Stockton State College Coastal Research Center

Stockton Marine Field Station
Steve Evert
Richard Stockton College of NJ
Marine Science and Environmental Field Station, Manager

Tom Beaty
Alliance for a Living Ocean

Mike DeLuca
Director of JCNEER

Tim Dillingham
American Littoral Society

Jody Carrera
ANJEC

Cindy Zipf
Clean Ocean Action
Maya VanRossum
Delaware Riverkeeper

Lisa Auermuller
Watershed / Outreach Coordinator
Jacques Cousteau National Estuarine Research Reserve

NJ Audubon Society
Eric Stiles
Kelly Mooij

Coastal Ocean Coalition
Benson Chiles

Partnership for the Delaware Estuary
Danielle Kreeger

Stevens Institute of Technology
The Center for Maritime Systems/Davidson Laboratory of Marine Hydrodynamics and Coastal Engineering
Thomas Herrington

Surfrider Foundation
John Weber

Urban Coast Institute, Monmouth University
Tony MacDonald
Susan Kennedy
Michael Schwebel

Hackensack Riverkeeper
Captain Bill Sheehan

Barnegat Bay Partnership
Ocean County College
Stanton Hales, Jr.

Sustainable Raritan River Collaborative
Judy Shaw

NJ Future
Chris Sturm

Environment NJ
Kevin Burkman

New York/ New Jersey Baykeeper
Debbie Mans

New York/New Jersey Harbor Estuary Program
Robert Pirani
Kate Boicourt

Hudson River Waterfront Conservancy
Helen Monague

The Nature Conservancy
Patricia Doerr
Tom Wells

Raritan Riverkeeper
Bill Shultz

New Jersey City University
Allison Fitzgerald

Lower Raritan Watershed Partnership
Heather Fenyk

Inter-Agency

Cali Alexander
NJ Dept of Health Seafood/Shellfish project Coordinator

Loel Muetter
NJ Dept of Health Food and Drug Safety Program

Jeffrey Perlman, PP, AICP
North Jersey Transportation Planning Authority

Patricia Elkis
Delaware Valley Regional Planning Commission (DVRPC)
Division Director, Planning

Donna Woolf
Delaware River Basin Commission

Edward Smith
New Jersey Department of Community Affairs

Walt McGrowsky
New Jersey Department of Transportation

Rob Fisher P.E.
New Jersey Turnpike Authority

Monique Purcell
New Jersey Department of Agriculture
Division of Agriculture and Natural Resources

Marc Helman
New Jersey Port Authority
The Port Authority of NY & NJ

Henry Patterson
New Jersey Water Supply Authority

Sharon Mascaro
New Jersey Meadowlands Commission

Genevieve Boehm
NJDOT Office of Maritime Resources

Gilbert H. Ewing, Jr.
NJ Marine Fisheries Council

Rick Engler
NJ Work Environment Council

Frank Santomauro PE, Chief Planning Division,
NY District Corps of Engineers

Gef Flimlin
Cooperative Extension of Ocean County
Rutgers New Jersey Agricultural Experiment Station
Extension Center

David Lamm
NRCS

Scott Stephens, Acting Director
Community and Constituent Relations
NJ Department of Transportation

Federal

EPA
Dan Montella
US EPA Region 2
Team Leader, Wetlands Protection Team
Watershed Management Branch

Army Corps
Sam Reynolds
Chief, Application Section II
Regulatory Branch

Elisa Chae-Banaja
Jim Boyer
Mike Hayduk
U.S. Army Corps of Engineers, North Atlantic Division
Planning & Policy Division

NOAA
Darlene Finch
Glynnis Roberts
Randy Schneider

Stanley W. Gorski
Field Offices Supervisor
Habitat Conservation Division
National Marine Fisheries Service
James J. Howard Marine Sciences Laboratory

US Fish and Wildlife
Ron Popowski
Carlos Popolizio
US Fish and Wildlife Services

US Geological Survey
John C. Brock
USGS
St. Petersburg Coastal and Marine Science Center

Cindy Thatcher
USGS
Eastern Geographic Science Center

Local Government

Atlantic County Hazard Mitigation
Vincent J. Jones

Bergen County Office of Emergency Management
Lt. Matthew Tiedemann

Burlington County Office of Emergency Management
Kevin Tuno

Camden County Office of Emergency Management
Samuel Spino

Cape May County Office of Emergency Management
Martin L. Pagliughi

Cumberland County Office of Emergency Management
Joseph Sever

Essex County Office of Emergency Management
Sheriff Armando Fontoura

Gloucester County Office of Emergency Management

Hudson County Hazard Mitigation

Mercer County Office of Emergency Management
Dean Raymond, County OEM Coordinator

Ocean County Hazard Mitigation

Monmouth County Hazard Mitigation
Michael Oppegaard
Robert Swannack

Middlesex County Hazard Mitigation
Helene Dougan

Union County Hazard Mitigation

Passaic County Hazard Mitigation

Salem County Office of Emergency Management

Somerset County Office of Emergency Management

## APPENDIX B - External Stakeholders Survey Response Summary

### Coastal Wetlands

33 out of 40 Stakeholders commented on Coastal Wetlands and Living Shorelines.
23 indicated they have done work on Coastal Wetlands and/or Living Shorelines over the past five years.
Over the past five years, what have been the three greatest issues in the protection, restoration or enhancement of existing coastal wetlands or preservation of new coastal wetlands and living shorelines?

| Answer Choices | Responses |
|---|---|
| Coastal storms | 17 |
| Development | 13 |
| Lack of funding | 13 |
| Permitting issues | 13 |
| Lack of data collection and monitoring | 12 |
| Flooding | 11 |
| Lack of habitat protection | 8 |
| Responses Other (please specify) | 7 |
| Poorly designed mitigation | 5 |
| Saltwater intrusion | 3 |
| Public outreach and education | 3 |
| Lack of enforcement | 3 |
| Regulatory changes | 1 |

Over the next five years, what actions can the Coastal Management Program take, or participate in, to be more effective in the protection, restoration or enhancement of existing coastal wetlands, or and creation preservation of new coastal wetlands and living shorelines?

| Answer Choices | Responses |
|---|---|
| Collaborative planning | 21 |
| Data collection, assessment and monitoring | 20 |
| Regulatory changes | 19 |
| Additional funding opportunities | 17 |
| Demonstration/pilot projects | 17 |
| Scientific research | 14 |
| Best practices guidance | 14 |
| Green infrastructure design and implementation training | 14 |
| Outreach and education | 12 |
| Enforcement action | 8 |
| Responses Other (please specify) | 2 |

## Coastal Hazards

25 out of 40 Stakeholders commented on Coastal Hazards.
23 indicated they have done work on Coastal Hazards over the past five years.
Over the past five years, what have been the three greatest issues relating to the prevention, or reduction of risks from coastal hazards?

| Answer Choices | Responses |
|---|---|
| Development in hazard area | 18 |
| Lack of regional planning and mapping | 9 |
| Lack of funding | 7 |
| Lack of design and implementation of alternative shorelines | 7 |
| Regulatory Changes | 5 |
| Lack of community planning assistance | 5 |
| Lack of hazard training and education for local governments | 5 |
| Lack of hazard mapping and planning | 4 |
| Lack of demonstration/pilot projects | 4 |
| Lack of data collection, assessment and monitoring | 3 |
| Responses Other, please explain | 3 |
| Lack of Education & Outreach | 2 |
| Lack of Scientific Research | 2 |

Over the next five years, what are the greatest opportunities for enhancing New Jersey's Coastal Management Program in order to prevent, or significantly reduce risk from coastal hazards?

| Answer Choices | Responses |
|---|---|
| Elimination/management of re/development in hazard areas | 21 |
| Regional resilience/hazard mitigation planning | 16 |
| Alternative shorelines stabilization methodologies | 13 |
| Restoration/mitigation of natural resources | 12 |
| Community resilience/hazard mitigation planning | 12 |
| Ecological solutions to community hazards | 11 |
| Strengthen/renovate existing shoreline protection structures | 9 |
| Outreach and education | 9 |
| Coastal Vulnerability Assessment | 9 |
| Cost-benefit analysis | 9 |
| Data collection, assessment and monitoring | 8 |
| Statewide adaptation planning | 8 |
| Additional funding opportunities | 7 |
| Sediment erosion management planning | 6 |
| Hazard mapping | 6 |
| Special Area Management Plans | 3 |
| Development of statewide partnerships | 2 |

## Public Access

21 out of 40 Stakeholders commented on Public Access.
18 indicated they have done work on Coastal Public Access over the past five years.
Over the past five years, what have been the three greatest issues facing public access to tidal waterways in NJ?

| Answer Choices | Responses |
|---|---|
| Number of access locations | 14 |
| Local policies/ordinances | 8 |
| Ease/difficulty of access | 7 |
| Boating access | 5 |
| State policies/regulations | 5 |
| Responses Other (please specify) | 5 |
| Education and outreach | 4 |
| Storm events | 4 |
| Restroom facilities/amenities | 3 |
| Tidal flooding | 2 |
| Swimming access | 1 |
| Fishing access | 1 |
| Surfing access | 1 |
| Safety | 1 |

What are the greatest opportunities for enhancing New Jersey's Coastal Management Program to more effectively address public access issues over the next five years?

| Answer Choices | Responses |
|---|---|
| Local policy/ordinances | 12 |
| Additional funding opportunities | 10 |
| Regulatory change | 9 |
| Community planning assistance | 7 |
| Outreach and education | 5 |
| User advocacy | 5 |
| Hazard mitigation planning | 4 |
| Responses Other (please specify) | 4 |

## Marine Debris

17 out of 40 Stakeholders commented on Marine Debris Enhancement.
11 indicated they have done work on Marine Debris over the past five years.
Over the past five years, what have been the three greatest issues with managing uses and activities that contribute to marine debris?

| Answer Choices | Responses |
|---|---|
| Education on sources of marine debris and prevention | 11 |
| Coastal storms | 9 |
| Stormwater infrastructure | 8 |
| Monitoring sources of land based marine debris | 7 |
| Monitoring sources of water based debris | 4 |
| Responses Other (please specify) | 4 |
| Waste management at beaches | 3 |
| Combined sewer overflows | 3 |
| Recycling rates | 1 |

What are the greatest opportunities for enhancing New Jersey's Coastal Management Program to more effectively address those marine debris issues over the next five years?

| Answer Choices | Responses |
|---|---|
| Outreach and education | 13 |
| Increased waste disposal options at public access sites | 8 |
| Demonstration/Pilot projects | 7 |
| Increased enforcement of existing waste management laws | 7 |
| Mapping of stormwater infrastructure | 6 |
| Regulatory changes | 5 |
| Regional partnerships | 3 |
| Responses Other (please specify) | 3 |

## Cumulative and Secondary Impacts

20 out of 40 Stakeholders commented on Cumulative and Secondary Impacts Enhancement.
10 indicated they have done work on Cumulative and Secondary Impacts over the past five years.
Over the past five years, what have been the three greatest issues with assessing and controlling the cumulative and secondary impacts of coastal growth and development on NJ's coastal resources?

| Answer Choices | Responses |
|---|---|
| Lack of resource protections standards | 12 |
| Development and sprawl | 11 |
| Lack of funding | 11 |
| Lack of state planning | 8 |
| Existing state regulations | 5 |
| Identification of nonpoint source pollution | 4 |
| Water use | 3 |
| Responses Other (please specify) | 2 |
| Identification of point source pollution | 1 |

What are the three greatest opportunities for enhancing New Jersey's Coastal Management Program to more effectively address those Cumulative and Secondary Impacts over the next five years?

| Answer Choices | Responses |
|---|---|
| Comprehensive planning program for coastal communities | 13 |
| Identification of critical areas for resource protections | 10 |
| Changes to Coastal Zone Management Rules (CZM) | 9 |
| Adoption of a statewide Water Supply Plan | 8 |
| Programs to retrofit existing developments storm water infrastructure | 8 |
| Changes to the Coastal Area Facilities Review Act (CAFRA) | 6 |
| Additional funding | 5 |
| Changes to the Water Quality Management Planning Act Rues (WQMP) | 4 |
| Changes to the stormwater rules | 4 |
| Cumulative impacts mapping | 4 |
| Identification and mapping of stormwater infrastructure | 4 |
| Data collection, assessment and monitoring | 3 |
| Adoption of a State Plan | 1 |

## Special Area Management Enhancement Plan

19 out of 40 Stakeholders commented on Special Area Management Enhancement Plan Enhancement.
7 indicated they have done work on Special Area Management Enhancement Planning over the past five years.
What areas of the State could benefit from a Special Area Management Plan?

| Answer Choices | Responses |
|---|---|
| Raritan Bay | 6 |
| Delaware Bayshore | 6 |
| Barnegat Bay | 5 |
| Passaic River | 4 |
| Maurice River | 4 |
| Shark River | 3 |
| Navesink River | 3 |
| Newark Bay | 2 |

What are the greatest opportunities for enhancing New Jersey's Coastal Management Program to identify areas in need of special area designation over the next five years?

| Answer Choices | Responses |
|---|---|
| Resource assessment and characterization | 14 |
| Regional partnerships | 13 |
| Increased funding | 9 |
| Regulatory changes | 4 |
| Local policy and ordinances | 4 |

## Ocean Resources

12 out of 40 Stakeholders commented on Ocean Resource Area Enhancement.
11 indicated they have done work on Ocean Resource planning over the past five years.
Over the last five years, what are the three greatest issues have you observed that facilitated or impeded the State's ability to plan for ocean resources?

| Answer Choices | Responses |
|---|---|
| Commercial and recreational fishing | 5 |
| Offshore development | 4 |
| Dredging | 3 |
| Recreational uses | 2 |
| Coastal hazards | 2 |
| Land-based development | 1 |
| Aquaculture | 1 |
| Marine transportation | 1 |
| Sand/Mineral extraction | 1 |
| Responses Other (please specify) | 1 |

What are the greatest opportunities for enhancing New Jersey's Coastal Management Program to more effectively address those issues over the next five years?

| Answer Choices | Responses |
|---|---|
| Regional Ocean Planning initiatives | 9 |
| Collaborative planning | 5 |
| Additional funding opportunities | 5 |
| Data Collection, assessment and monitoring | 4 |
| Outreach and education | 4 |
| Regulatory changes | 4 |
| Demonstration/Pilot projects | 3 |
| Scientific research | 2 |
| Best Management Practices guidance | 1 |

## Energy and Government Facility Siting

11 out of 40 Stakeholders commented on Energy and Government Facility Siting Enhancement.
8 indicated they have done work on Energy and Government Facility Siting Enhancement planning over the past five years.
Over the last five years, what are the three greatest issues you have observed that facilitated or impeded the State's ability to plan for ocean resources?

| Answer Choices | Responses |
|---|---|
| Coastal hazards | 6 |
| Land-based development | 3 |
| Commercial and recreational fishing | 3 |
| Recreational uses | 3 |
| Dredging | 3 |
| Offshore development | 2 |
| Stormwater runoff | 2 |
| Marine transportation | 1 |
| Sand/Mineral extraction | 1 |

What are the greatest opportunities for enhancing New Jersey's Coastal Management Program to more effectively address those issues over the next five years?

| Answer Choices | Responses |
|---|---|
| Regional ocean planning initiatives | 7 |
| Data collection, assessment and monitoring | 5 |
| Collaborative planning | 5 |
| Best Management Practices guidance | 4 |
| Regulatory changes | 3 |
| Scientific research | 2 |
| Additional funding opportunities | 2 |
| Enforcement action | 1 |
| Responses Other (please specify) | 1 |

## Aquaculture

18 out of 40 Stakeholders commented on Aquaculture Enhancement.
8 indicated they have done work on development or siting of aquaculture facilities New Jersey's coastal zone over the past five years.
Over the last five years, what are the three greatest issues you have observed that could facilitate or impede the siting of public or private aquaculture facilities in New Jersey's coastal zone?

| Answer Choices | Responses |
|---|---|
| Responses Other (please specify) | 9 |
| Land-based development | 6 |
| Recreational uses | 6 |
| Stormwater runoff | 4 |
| Coastal hazards | 4 |
| Ocean acidification | 3 |
| Offshore development | 2 |
| Marine transportation | 2 |
| Dredging | 2 |
| Invasive species | 1 |
| Commercial and recreational fishing | 1 |

What are the greatest opportunities for enhancing New Jersey's Coastal Management Program to more effectively address those issues over the next five years?

| Answer Choices | Responses |
|---|---|
| Regulatory changes | 11 |
| Data Collection, assessment and monitoring | 9 |
| Public outreach and education | 5 |
| Enforcement action | 2 |
| Scientific research | 7 |
| Collaborative planning | 9 |
| Additional funding opportunities | 5 |
| Best Management Practices guidance | 6 |
| Demonstration/Pilot projects | 6 |
| Regional ocean planning initiatives | 1 |