

**Georgia Coastal Management Program
Section 309 Assessment**

**DRAFT Assessment
May 1, 2020**

Introduction

Section 309 of the Coastal Zone Management Act identifies nine Program Enhancement Areas, including: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, ocean resources, energy and government facility siting, aquaculture and Special Area Management Plans. Every five years, coastal states are encouraged to conduct a self-assessment of their coastal management programs to assess the effectiveness of current efforts to address known or identified problems. The Georgia Coastal Management Program (GCMP) recently completed an assessment its Program and identified problems and opportunities for each of the enhancement areas; determined the effectiveness of the Program's existing efforts to address problems for each of the enhancement objectives; and identified priority needs for Program enhancements for the period 2016 to 2020.

A high level, Phase I assessment allowed the GCMP to evaluate each of the nine enhancement areas to determine in which existing management efforts are satisfactorily addressing enhancement area objectives. For enhancement areas for which deficiencies were noted, the GCMP ranked each area in terms of the Program's priority for addressing them. Priority was determined based on the perception of immediate need and whether the identified gaps were being addressed through other means. The GCMP ranked three enhancement areas as high priorities during its Phase I assessment: coastal hazards, cumulative and secondary impacts, and wetlands.

A more intense, Phase II assessment was conducted for each of the high priority enhancement areas. Management priorities were identified for coastal hazards, cumulative and secondary impacts and wetlands and potential strategies for addressing those priorities were explored. Upon conclusion of the Phase II assessment, the GCMP identified a single strategy to fulfill the management priorities for all three of these areas. This strategy entitled "Building Resiliency with Nature Based Infrastructure" will encourage the use of nature based infrastructure to improve flood resilience in coastal communities. This strategy will take 5-years and will cost approximately \$1,375,000 in funding from NOAA.

As required by NOAA, on May 18, the Georgia Coastal Management Program's Draft Section 309 Assessment and Strategy will be made available for public comment. A public notice will be sent via grants.gov email distribution lists and posted on the GCMP website. Written comments will be received through Friday, June 26, 2020. An overview of the Assessment and Strategy will be presented to the Coastal Advisory Council during its summer meeting.

Summary of Recent Section 309 Achievements

The GCMP's most recent Section 309 Assessment will be completed in 2021 and will result in a 5-year strategy addressing gaps in two program enhancement areas, Coastal Hazards and Cumulative and Secondary Impacts.

The strategy addresses the development of environmental and economic incentives and policy recommendations to encourage coastal local governments to adopt ordinances related to sustainable infrastructure practices as a means to enhance resilience to coastal hazards, especially flooding. Specifically, the GCMP has been working with two local communities to address riverine and coastal flooding. The strategy includes the development of a Guidance Document and ordinances as well as trainings that address the economic impacts of flooding both with and without green infrastructure practices.

Georgia Coastal Management Program

2021-2025

“Building Resiliency with Nature Based Infrastructure”

I. Issue Area(s)

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

- | | |
|--|--|
| <input type="checkbox"/> Aquaculture | <input checked="" type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy and Government Facility Siting | <input checked="" type="checkbox"/> Wetlands |
| <input checked="" type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input type="checkbox"/> Special Area Management Planning | |

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. The goal of this strategy is to develop a Resiliency Reference Guide for building coastal resiliency through assessing vulnerabilities, evaluating opportunities for Nature-Based Infrastructure (NBI) solutions, and encouraging implementation through sound science and policy decisions. The GCMP will develop an improved Hazard Vulnerability Assessment (HVA) that identifies community and natural resource vulnerabilities that will steer program efforts. The Resiliency Reference Guide will include developing a shoreline management framework that incorporates the state of the science for estuarine shoreline management, developing resilient beach management planning tools to support NBI practices, and supporting local and state program changes by creating scientific tools, developing local policies and substantiating practices to support the transfer of NBI implementation.

C. The Georgia Coastal Management Program (GCMP) has focused on resiliency efforts through multiple approaches that target different coastal areas, habitats, and populations. Most recently, the

current 309 Strategy, “Enhancing Coastal Resilience with Green Infrastructure”, is developing environmental and economic incentives and policy recommendations to encourage coastal local governments to adopt ordinances related to green or NBI practices as a means to enhance resiliency to coastal and riverine flooding. In addition, the GCMP has worked with the City of Tybee Island to implement dune enhancement and creation through regulatory guidance and best management practices. The Shore Protection Act (SPA) has been the state authority by which these projects are authorized; however, in addition to state policy, GCMP staff have provided technical assistance to ensure best practices that coincide with the SPA. Lastly, the GCMP, along with partners, has been leading the effort to guide living shoreline planning, design, implementation and monitoring. The goal of implementing living shorelines in Georgia is to provide alternatives to traditional estuarine shoreline stabilization techniques that increase habitat value and resiliency to rising sea level while stabilizing the shoreline from erosion.

Each of the above efforts is unique in the people, place and protection targeted. However, collectively they demonstrate the multiple ways that the GCMP is addressing NBI, a growing priority of federal, state and local managers as a mechanism by which to address coastal resiliency.

Through this strategy the GCMP will document and promote the use of NBI in two systems: beaches/dunes and estuarine shorelines. The GCMP will work with the City of Tybee Island to support beach management planning efforts that will document NBI practices and serve to support updating their 2004 Beach Management Plan. The GCMP will assist Tybee in policy development specific to prioritized beach management issues such as dune creation and enhancement, dune planting, and beach access management such as the elevation of at-grade crossovers, stormwater management in jurisdictional areas, etc. A stakeholder group will be established to identify necessary policy topics and Glynn County representation will be included in all project meetings to ensure transferability to management of the beaches elsewhere along the coast (St. Simons Island, Jekyll Island, Sea Island). The GCMP will also host a follow up Beach Summit to their highly successful 2017 Summit. This forum will include beach managers from all Georgia beaches and will focus on sharing these project results as well as highlighting the latest science and policy and access to emergency management funding, when applicable.

In addition to beach management, the GCMP is also active in evaluating NBI, such as living shorelines, used in tidal creek systems. There are currently eight living shoreline demonstration sites that have been constructed in Georgia since the Program began exploring their use in shoreline management (2006). Despite the low number of sites being constructed, inquiries for living shorelines have been substantially greater, confirming that there is interest from the public to utilize living shoreline techniques. Several uncertainties are the likely cause of low construction numbers, including the lack of information to show that living shorelines are stable structures that abate erosion, lack of regulatory incentives, and access to oyster shell. Through this strategy, the GCMP will study the potential for incentives in the existing regulatory framework and will also identify and address necessary data gaps for living shoreline understanding in Georgia’s high tidal environment.

In addition to identifying the NBI approaches that may be successful for coastal Georgia, this strategy proposes to use a Hazard Vulnerability Assessment tool (HVA) to assist GCMP in prioritizing community needs as it relates to their individual coastal hazard vulnerabilities. Originally developed with the Governors South Atlantic Alliance in 2012, HVA is an assessment built within the program AMBUR (Analyzing Moving Boundaries Using R). AMBUR-HVA uses a variety of biological and physical datasets including flooding, sea level rise, habitat data, shoreline change,

LiDAR, fetch, etc. and intersects these with population datasets (wealth, age, gender, race, etc.) to identify socially vulnerable areas. AMBUR-HVA creates a scientifically defensible and management-friendly product that generates a coastal vulnerability index that can then be used to provide a consistent quantification of coastal Georgia's vulnerability to coastal hazards and inform GCMP's assistance to coastal communities, including honing in on areas where NBI is a viable option.

Lastly, the GCMP will develop a comprehensive Resiliency Reference Guide that is tailored to individual community needs. The Guide will incorporate the science and tools developed for NBI practices, policies and best practices identified for coastal communities, and specific vulnerabilities to coastal hazards identified through the assessment. This Guide will assist coastal communities in more effectively mitigating risks and enhancing resiliency.

III. Needs and Gaps Addressed

The City of Tybee Island is located just off the coast of Savannah and is a major attraction to beach goers. The City of Tybee Island has invested in their beaches for many years, having created a Task Force by which to lead this effort. In 2004, with GCMP support, Tybee developed its first Beach Management Plan, a document created to help identify necessary beach management actions and processes by which those actions needed to be approved. The Plan was well intentioned, but never fully gained support and recognition as a necessary document. In addition, since the adoption of the Plan, the City of Tybee Island has begun to more comprehensively manage their beaches. Management strategies have included the creation of resilient dune structures, vegetating enhanced and created dunes, improving at-grade crossovers to minimize interior flooding, litter management, etc. Tybee received state funding from the Department of Community Affairs following the impacts to coastal Georgia as a result of Hurricane Irma in 2017. Currently, they are also applying for funding to conduct an island wide stormwater management study through FEMA. Together these opportunities have improved not only Tybee's beach community but have informed better planning for resiliency. The GCMP proposes to build upon that knowledge and local interest by assisting in policy development that can be adopted to fully implement resiliency practices longer term.

Currently, living shorelines are promoted nationally as a NBI solution to abate erosion, while also enhancing and creating oyster reef and *Spartina alterniflora* salt marsh habitat. Living shorelines in Georgia have been widely studied in reference to their impact to habitat and nekton productivity. However, their ability to stabilize the shoreline has only been visually observed. This gap in knowledge is what our program wishes to bridge in this 309 strategy, to determine the stabilization ability that living shorelines can provide. By working with experts, the GCMP will develop methodologies to understand living shorelines stability in order to better understand how these NBI techniques function in coastal Georgia.

This strategy will also address the need for targeted, community specific technical assistance to coastal communities by addressing their individual needs in a Resiliency Reference Guide. Coastal Georgia communities have several plans that have been adopted to incorporate coastal resiliency measures. However, it can be rather overwhelming when the need arises to pinpoint a project that will assist in resiliency while mitigating against other hazards. When Housing for Urban Development (HUD) released the Notice for Federal Funding Opportunity for \$37 million dollars to the State of Georgia, coastal communities identified project needs, none of which considered projects that also aided them in being resilient to future hazards. A quick reference guide tailored

to each jurisdiction can be far more effective for the actual implementation of resiliency actions identified throughout this strategy.

IV. Benefits to Coastal Management

This strategy will build upon the last three 309 strategies of the GCMP. Specifically, it directly builds upon the current 309 (2016-2020) by adding a new focus of green infrastructure to provide resiliency to beach communities. Also, the GCMP strategy from 2011-2015 focused on coastal hazards and resulted in concentrating efforts to promote hazard resilience through post-disaster redevelopment planning. Even prior to that, the GCMP strategy from 2006-2010 focused, in part, on the development of a Coastal Wetland Restoration Program that identified the early groundwork for many types of restoration projects.

This current strategy of developing NBI guidance will directly benefit local communities by increasing their ability to document and develop priority best practices for their communities. The strategy will also benefit state and federal jurisdictions within the GCMP area by developing the regulatory framework for estuarine shoreline management. Building on current federal initiatives, such as the Engineering With Nature program, setting the framework will be important for all future NBI projects in Georgia.

V. Likelihood of Success

The GCMP has worked closely with local communities, state, and federal programs to develop and implement green infrastructure initiatives. Additionally, the GCMP has helped guide the City of Tybee Island in their beach management planning, most recently surrounding dune enhancement. These efforts have been completely unique but do share a NBI commonality. Moreover, the GCMP community initiatives have developed a focus on resiliency for many years. Community protection from coastal hazards, such as flooding, has been a focal area in the current 309. The GCMP is poised to move the current 309 into practice focusing on NBI and policy development. The community identified are in a prime position to identify NBI as a scientifically and policy supported strategy to resiliency.

During the 2019 GCMP 312 Evaluation, NOAA reviewers recommended that the GCMP “encourage the City of Tybee Island to record the methodology they followed in the reconstruction of the dune system to provide information for future efforts of a similar type both in Tybee Island and in other communities”. Additionally, NOAA evaluators recommended the GCMP “examine the permit approval process for habitat restoration and nature-based shoreline protection projects to determine possible options for streamlining the process”. The GCMP direction, along with our current relationships with all levels of government, and with our shared common goal of creating a resilient Georgia coast makes this strategy most critical to undertake now. For the reasons above, the strategy will be successful due to the partnerships currently in place.

VI. Strategy Work Plan

Strategy Goal:

The goal of this strategy is to develop a Resiliency Reference Guide for building coastal resiliency through assessing vulnerabilities, evaluating opportunities for Nature-Based Infrastructure (NBI) solutions, and encouraging implementation through sound science and policy decisions. The GCMP will develop an improved Hazard Vulnerability Assessment (HVA) that identifies community and

natural resource vulnerabilities that will steer program efforts. The Resiliency Reference Guide will include developing a shoreline management framework that incorporates the state of the science for estuarine shoreline management, developing resilient beach management planning tools to support NBI practices, and supporting local and state program changes by creating scientific tools, developing local policies and substantiating practices to support the transfer of NBI implementation.

Total Years: 5

Total Budget: \$1,300,000

Year: 1

Description of activities:

- Project kickoff meetings
 - Create a stakeholder group with beach communities focusing on the City of Tybee Island's Beach Task Force
 - Identify beach management planning priorities and needs
- Initiate Hazard Vulnerability Assessment development
 - Identify and acquire datasets pertaining to physical characteristics, exposure, human population, and ecosystems/habitats of the six coastal counties.
 - Update the Hazard Vulnerability Assessment to include sea level rise and other identified datasets from above
- Create an in-house shoreline restoration committee to identify the framework for nature-based shoreline projects
 - Identify living shoreline standards
 - Evaluate existing regulatory processes
 - Identify and prioritize NBI shoreline science gaps including shoreline structure stability needs
 - Develop a methodology for assessing the overall function of living shoreline structures

Major Milestone(s):

- Identify data sets for inclusion into the Hazard Vulnerability Assessment (HVA)
- Identify priority beach management planning priorities for best practices policy guidance
- Create skeleton framework for NBI shoreline processes
- Create draft of living shoreline standards
- Methodology for assessing the overall function of living shorelines in terms of stabilizing erosional banks and limiting flooding to upland during storm/high tide events

Budget: \$260,000

Year: 2

Description of activities:

- Run HVA with updated datasets and new parameters for 6 tier one counties
- Analyze HVA results
- Develop risk assessment report including HVA scores for all 6 counties
- Gather previously identified resiliency action steps for each individual county and its municipalities such as Disaster Recovery and Redevelopment Plan action items, Low Impact Development and Green Infrastructure resiliency steps, Nature Based Infrastructure recommendations etc.
- Identify pilot sites to implement living shoreline assessment utilizing methodology developed in YR 1

Major Milestone(s):

- Creation of HVA with updated datasets and new parameters
- Risk assessment report for all 6 counties to be used to determine next steps
- Identification of living shoreline standards along Georgia's high tidal amplitude estuarine shorelines
- Living shoreline stability assessment

Budget: \$260,000

Year: 3

Description of activities:

- Integrate HVA into existing portals for use by public
 - Georgia Coastal Hazards Portal
 - Georgia Wetland Restoration Access portal
 - Georgia Coastal and Marine Planner
- Meet with each local community to review HVA results and ground truth other vulnerabilities not measured
- Begin drafting Community Resilience Reference Guides by composing a comprehensive list of resiliency steps into a short checklist for each coastal community to include financial opportunities, resiliency policies or ordinances where appropriate (existing or newly developed), and project guidance where appropriate (LS guidance, permitting steps, etc.)
- Continue development of nature-based infrastructure science gaps
- Integrate shoreline standards into policy framework
- Continue monitoring of any identified living shoreline structures utilizing established methodologies and conduct a retrospective analysis to assess how well the structures that have been built to date are performing as it relates to reducing erosion and storm abatement

Major Milestone(s):

- HVA results integrated into existing portals for public use
- Shoreline policy framework completed

Budget: \$260,000

Year: 4

Description of activities:

- Complete final Community Resiliency Reference Guides
- Meet with each county and municipality to review their Resiliency Reference Guide and recommendations and present at county/city commission/council meetings
- Communicate with newly formed Resiliency Networks on the coast.
- Develop appropriate construction practices that may help reduce or limit any failures of living shorelines
- Complete assessment for living shoreline stability

Major Milestone(s):

- Community Resiliency Reference Guides presented to communities
- Updated living shorelines construction best management practices

Budget: \$260,000

Year: 5

Description of activities:

- Host Beach Summit for Georgia beach managers to discuss the latest science and beach management practices
- Roll out training for Beach Management Plans, Resiliency Reference Guides, policies/ordinances, and shoreline management state of the science and policy
- Present findings at local, state, and national conferences
- Summarize and present findings of the living shoreline assessment as part of Reference Guide

Major Milestone(s):

- Host Beach Summit
- Present overall strategy results at local and regional conferences

Budget: \$260,000

VII. Fiscal and Technical Needs

A. Fiscal Needs:

We anticipate that all fiscal needs for the above scope of work can be met with 309 funding. Any outstanding needs, if identified, will be identified and prioritized for Projects of Special Merit.

B. Technical Needs:

The GCMP does not have the technical expertise to carry out several aspects of this strategy and will contract with project partners to carry out those identified activities. Specifically, we will contract with Georgia Southern University to create the Hazard Vulnerability Assessment due to their expertise in creating the original tool. Similarly, the GCMP does not have experience in developing specific policies, therefore any tasks associated with policy development will be contracted in order to be provided back to GCMP and the local governments for adoption. Lastly, the GCMP does not

have the resources to address some of the gaps in living shoreline science. Where needed, the GCMP will contract necessary tasks related to the development of living shoreline science to a qualified contractor/university. Those deliverables are expected to be used in policy development and outreach and education to property owners.

VIII. Projects of Special Merit (Optional)

The GCMP has identified additional projects that may be successful Projects of Special Merit. These would provide additional benefits by updating local plans to implement beach management ordinances and the Hazard Vulnerability Assessment, as well as other NBI related information related to shoreline resiliency.

5-Year Budget Summary by Strategy

At the end of the strategy section, please include the following budget table summarizing your anticipated Section 309 expenses by strategy for each year. Generally, CMPs should only develop strategies for activities that the state intends to fund and work on given their anticipated level of Section 309 funding. However, in some circumstances, CMPs may wish to use the assessment and strategy development process as a broader strategic planning effort for the CMP. In that case, the CMP may elect to include additional strategies that exceed the state’s anticipated Section 309 funding over the five-year period. If the CMP chooses this approach, it should still clearly indicate which strategies it anticipates supporting with Section 309 funding and which strategies it anticipates supporting through other funding sources.

Strategy Title	Anticipated Funding Source (309 or Other)	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Building Resiliency with Nature Based Infrastructure		\$260,000	\$260,000	\$260,000	\$260,000	\$260,000	\$1,300,000
Total Funding		\$260,000	\$260,000	\$260,000	\$260,000	\$260,000	\$1,300,000

Aquaculture

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

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

Purpose: To quickly determine whether 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.¹

Status and Trends of Aquaculture Facilities and Activities

Type of Facility/Activity	Number of Facilities ²	Approximate Economic Value	Change Since Last Assessment (↑, ↓, -, unkwn)
Public Picking	7		-
State Leases	6	\$1,882,163*	↓
Private Leases	5		↓

*total is for state and private leases combined due to confidentiality requirements.

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.

N/A

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.

¹ While focused on statewide aquaculture data rather than just within the coastal zone, the *Census of Aquaculture* (www.aqcensus.usda.gov/Publications/Census_of_Aquaculture/) may help in developing your aquaculture assessment. The census is conducted every 10 years and the last report was released in 2013. The report provides a variety of state-specific aquaculture data to understand current status and recent trends. .

² Be as specific as possible. For example, if you have specific information of the number of each type of facility or activity, note that. If you only have approximate figures, note "more than" or "approximately" 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.

Significant Changes in Aquaculture Management

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	Y	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.
- Changes in aquaculture comprehensive siting plans or procedures
 - a. Georgia's 2019 General Assembly passed an amendment to current law to facilitate shellfish aquaculture (aka "mariculture") in Georgia. Previous law spoke to wild harvest of oysters and clams in intertidal zones. The amended law speaks to requirements needed to farm oyster and clams in subtidal areas as well. Rules and regulations subsequently adopted in support of the amended aquaculture laws set minimize siting procedures for activities in subtidal areas.
 - b. Georgia's interest in modernizing its aquaculture laws for shellfish began with a 2006-2010 Section 309 strategy that began evaluating the local industry and interest in the oyster. The resulting program change was focused on water quality, the number one siting consideration for shellfish aquaculture. Subsequent work supported by CZM staff and 306 pass-through funding (Coastal Incentive Grants and directed contracts) helped to spur on the recent law changes and also laid the foundation for minimum siting criteria in subtidal areas.
 - c. Georgia is prepared to implement the new siting criteria in Spring 2020. If additional criteria need to be developed in order to a) better ensure success in oyster farming or b) minimize user conflict, the GCMP will work with area stakeholders (citizens, commercial and recreational resource users, etc.) and a new Shellfish and Mariculture Advisory Panel to make those changes.
- Other aquaculture statutes, regulations, policies, or case law interpreting these
 - a. In 2019, Georgia's law regulating shellfish harvest was amended significantly to provide for shellfish aquaculture (aka "mariculture"). Previous law allowed for wild harvest of oysters and clams in intertidal areas only. The new law allows for farming of clams and oysters in both intertidal and subtidal areas. The law also provides a new regulatory framework for shellfish mariculture that did not exist previously. The purpose of the law change is to facilitate the growth of a new fishery in Georgia, specifically subtidal oyster farming.
 - b. The amendments to Georgia's shellfish law were a CZM-driven change since the management of the state's shellfish fishery is housed within the Coastal Management Program. Georgia's interest in modernizing its shellfish aquaculture laws began with a 2006-2010 Section 309 strategy that began evaluating the local industry, and interest in oyster farming. The resulting program change was focused on water quality and creating enforceable policies within the GCMP to protect shellfish growing areas. Subsequent work supported by CZM staff and 306

pass-through funding (Coastal Incentive Grants and directed contracts) helped to spur on the recent law changes and laid the foundation for a new regulatory framework.

c. In December 2020 the DNR Board of Natural Resources adopted rules and regulations related to shellfish aquaculture. The rules and amendments to state law go into effect March 1, 2020. At that time, the GCMP will implement a new Mariculture program. A result of the previous work done through the GCMP, there is high likelihood that the shellfish aquaculture industry to begin to grow and demonstrate success within the first year. Over the next couple of years, the GCMP hopes to build on rule and policy that will facilitate the growth of a robust mariculture industry while continuing to grow and support wild shellfish harvest. The program will continue to work with other state and federal partners to ensure that all growers are provided technical assistance for all required permit authorizations and to ensure that all stakeholders are engaged in the process as the industry grows along the coast.

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.

While aquaculture remains a high priority for the GCMP, as evidenced by the level of CZM staff and funding directed toward growth of the Mariculture program, is it a medium priority in the context of this assessment. Recent law and rule changes are the result of many years of research and input and need to be implemented and the new industry off-the-ground before the Program seeks to work in other areas of aquaculture. Also, at this time there is a low likelihood of viable interest in other forms of aquaculture (finfish, algae/seaweed) in the near future. However, the GCMP is prepared to address unexpected requests through other resources, notably GCAMP and other data sources.

Resources and Tools:

Below are a few national resources and tools that may be useful in conducting your assessment or developing aquaculture strategies. States likely have other state-specific resources, tools, and data that would be useful as well.

Coastal Aquaculture Planning Portal

The Coastal Aquaculture Planning Portal is a toolbox of coastal planning tools designed to assist managers, planners, and industry with sustainable aquaculture development.

Geographic Scope: National

Website: www.coastalscience.noaa.gov/research/marine-spatial-ecology/coastal-aquaculture-planning-portal-capp/#

MarineCadastre.gov Viewer

This data viewer provides the baseline information needed for ocean planning efforts, particularly those that involve finding the best location for renewable energy projects. Users choose an ocean geography and quickly see the applicable jurisdictional boundaries, restricted areas, laws, critical habitat locations, and other important features. With the national viewer, potential conflicts can be identified and avoided early in the planning process, and users can visually analyze and explore geospatial data for marine spatial planning activities and find direct access to authoritative marine cadastral data from federal and state sources.

Geographic Scope: National

Website: www.coast.noaa.gov/digitalcoast/tools/mmc

NOAA Office of Aquaculture

The Office of Aquaculture fosters sustainable aquaculture that will create employment and business opportunities in coastal communities; provide safe, sustainable seafood; and complement NOAA's comprehensive strategy for maintaining healthy and productive marine populations, species, and ecosystems and vibrant coastal communities.

Geographic Coverage: National and regional

Website: www.nmfs.noaa.gov/aquaculture/index.htm

USDA Census of Aquaculture

The U.S. Department of Agriculture publishes the Census of Aquaculture. The census provides a variety of state-specific aquaculture data to understand current status and recent trends. The last census was released in 2013.

Geographic Coverage: National

Website: www.aqcensus.usda.gov/Publications/Census

Coastal Hazards

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

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

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

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

Resource Characterization:

1. In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The following resources may help assess the level of risk for each hazards. Your state may also have other state-specific resources and tools to consult. Additional information and links to these resources can be found in the “Resources” section at the end of the Coastal Hazards Phase I Assessment Template:

- The state’s multi-hazard mitigation plan.
- Coastal County Snapshots: Flood Exposure
- Coastal Flood Exposure Mapper
- Sea Level Rise Viewer/Great Lakes Lake Level Change Viewer
- National Climate Assessment

General Level of Hazard Risk in the Coastal Zone

Type of Hazard	General Level of Risk ¹ (H, M, L)
Flooding (riverine, stormwater)	H
Coastal storms (including storm surge)	H
Geological hazards (e.g., tsunamis, earthquakes)	L
Shoreline erosion	H
Sea level rise	H
Great Lakes level change	N/A
Land subsidence	L
Saltwater intrusion	M
Other (please specify)	

¹ 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*

2. 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.

- Georgia Statewide Hazard Mitigation Plan 2019
- 2016 and 2017 Hurricane Events
- 2017 Project of Special Merit *Using Green Infrastructure as a Resiliency Approach to Future Flooding Impacts*

Risk and capacity assessments have been completed for Glynn, Camden, Charlton, McIntosh, Liberty and Wayne Counties since the last assessment. Products from these efforts give the GCMP needed data to provide better technical assistance to the local governments in the coastal zone.

Management Characterization:

1. In the tables below, 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.

Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law

Topic Addressed	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)
Elimination of development/redevelopment in high-hazard areas ²	N	Y	Y
Management of development/redevelopment in other hazard areas	N	Y	N
Climate change impacts, including sea level rise or Great Lakes level change	N	Y	Y

Significant Changes in Hazards Planning Programs or Initiatives

Topic Addressed	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)
Hazard mitigation	Y	Y	Y
Climate change impacts, including sea level rise or Great Lakes level change	Y	Y	Y

Significant Changes in Hazards Mapping or Modeling Programs or Initiatives

² Use state's definition of high-hazard areas.

Topic Addressed	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)
Sea level rise or Great Lakes level change	Y	Y	Y
Other hazards			

- Briefly state how “high-hazard areas” are defined in your coastal zone.

For the purposes of providing technical assistance to local governments, the CMP uses FEMA’s Flood zones for high hazard areas as well as localized sea level rise maps. These areas can easily be displayed on maps for each of the 11 counties.

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

Eight of the eleven counties have completed Disaster Recovery and Redevelopment Plans with assistance and funding from the CMP forcing (the remaining 3 counties will be complete by the end of the year). This process forced the communities to address redevelopment and to consider current and future changes that need to be made. This is an exercise that had never been carried out until now.

Five of the six coastal counties have included sea level rise and shoreline change into their DRRPs and into their local hazard mitigation plans with the assistance of the CMP. For most counties, this is the first time that this has been done.

CMP staff is a member of the State Hazard Mitigation Planning team and provided language regarding sea level rise to be included into the new plan. The CMP also provided results from the 2015 Project of Special Merit *A Regional Approach to Coast-wide Resiliency Planning* which were included as an attachment into the state plan. The Governor signed the new plan April 2019, which included the SLR additions for the first time.

Enhancement Area Prioritization:

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

High X
 Medium
 Low

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

According to the 2020 survey to the Coastal Advisory Council, the Georgia coast is most vulnerable to the following in order of highest to lowest vulnerability: coastal storms (including storm surge), flooding

(riverine, storm water), and sea level rise. The GCMP works in many capacities to address flooding (current 309), coastal storms, shoreline erosion and sea level rise but due to the complex nature of each of these, there is continued and new work to be done to assist communities in being more resilient to coastal hazards.

Resources and Tools:

Below are a few national resources and tools that may be useful in conducting your assessment or developing coastal hazards strategies. States likely have other state-specific resources, tools, and data that would be useful as well.

Climate.gov

NOAA's Climate.gov provides science and information for a climate-smart nation. The "Supporting Decisions" is a clearinghouse of reports, resources, and decision-support tools for planners and policy leaders who want authoritative climate science information to help them understand and manage climate-related risks and opportunities.

Geographic Scope: Various by resource

Website: www.climate.gov

CZMA Performance Measurement System Data

Annual CZMA performance measurement data for government coordination and habitat measures. The online database can be used to synthesize existing state and territory data reported during the assessment period. Note: Only CMP staff with permission to enter performance measurement data are able to access the database through their assigned account.

Geographic Scope: All coastal states and territories

Website: www.coast.noaa.gov/czmpm/Login.aspx?ReturnUrl=%2fczmpm%2f

National Climate Assessment Web Tool

The U.S. Global Change Research Program provides an interactive web tool to quickly view key findings from the Fourth National Climate Assessment. Data are summarized by region and national topics (including coastal effects which includes a summary of key coastal effects, by region).

Geographic Scope: Entire United States (including territories)

Website: www.nca2018.globalchange.gov

NOAA C-CAP Coastal Land Atlas

Online data viewer provides user-friendly access to regional land cover and land cover change information developed through NOAA's Coastal Change Analysis Program (C-CAP). The tool summarizes wetland change trends and can highlight specific changes of interest (salt marsh losses to open water, for instance). Users can investigate how land cover changed between 1996, 2001, 2006, 2011, and 2016. Although data are provided by county, NOAA staff members are able to help states and territories easily aggregate county data into a statewide summary.

Geographic Scope: Contiguous United States and Hawaii

Website: www.coast.noaa.gov/digitalcoast/tools/lca.html

NOAA Coastal County Snapshots: Flood Exposure

Assesses a county's exposure and resilience to flooding. Analyzes a county's dependence on the ocean or Great Lakes for a healthy economy. Examines the benefits a county receives from its wetlands. Compares counties to each other or for regional analysis. Allows users to download a PDF report for the snapshot of their choice.

Geographic Scope: Coastal states only. Currently not available for territories.

Website: www.coast.noaa.gov/digitalcoast/tools/snapshots.html

NOAA Coastal Flood Exposer Mapper

The online visualization tool supports communities that are assessing their coastal hazard risks and vulnerabilities. The tool creates a collection of user-defined maps that show the people, places, and natural resources exposed to coastal flooding. The maps can be saved, downloaded, or shared to communicate flood exposure and potential impacts. In addition, the tool provides guidance for using these maps to engage community members and stakeholders.

Geographic Scope: East Coast, Gulf of Mexico, and islands in the Pacific and Caribbean.

Website: www.coast.noaa.gov/digitalcoast/tools/flood-exposure.html

NOAA Sea Level Rise and Great Lakes Level Change Viewers

The Sea Level Rise Viewer displays potential future sea levels and provides simulations of sea level rise at local landmarks, including modeling potential marsh migration due to sea level rise. The viewer overlays social and economic data onto potential sea level rise and visualizes how tidal flooding will become more frequent with sea level rise. The Great Lakes Level Change Viewer creates visuals that capture lake level changes that range from six feet above to six feet below historical long-term average water levels in the Great Lakes. Potential shoreline and coastal impacts are also provided.

Geographic Scope: All coastal states and territories except for Alaska.

Website: www.coast.noaa.gov/digitalcoast/tools/slr.html (Sea Level Rise Viewer) or www.coast.noaa.gov/llv/ (Great Lakes Level Change Viewer)

U.S. Climate Resilience Toolkit

The toolkit provides information and tools to help people understand and assess their climate risk. The toolkit includes a framework to discover and document climate hazards and then develop workable solutions to lower climate-related risks and case studies to see how others are reducing their climate risk. A visualization tool generates interactive graphs and maps showing climate projections and observations for any county in the contiguous U.S. and allows users to explore historical temperature and precipitation observations at hundreds of climate stations as well as view observed and projected days of high-tide flooding at more than 80 coastal tide gauge stations.

Geographic Scope: National

Website: toolkit.climate.gov/

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: *(Must be completed by all states.)*

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

Resource Characterization:

1. Using National Ocean Economics Program Data on population and housing,¹ please indicate the change in population and housing units in the state's coastal counties between 2012 and 2017. 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 data is available (2012-2017) to approximate current assessment period.

Trends in Coastal Population and Housing Units

	2012	2017	Percent Change (2012-2017)
Number of people	650,383	680,232	4.59%
Number of housing units	283,752	296,624	4.54%

2. Using provided reports from NOAA's Land Cover Atlas,² please indicate the status and trends for various land uses in the state's coastal counties between 1996 and 2016. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period that the data represent. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Instead, Puerto Rico should just report current land use cover for developed areas and impervious surfaces.

Developed land use has increased in coastal Georgia since 1996. Land types being converted would be scrub/shrub and forested. Coastal salt marsh acreage remains constant due to the protections offered under the Coastal Marshland Protection Act. Freshwater wetlands permitted through the ACE are replaced through mitigation.

¹www.oceaneconomics.org/Demographics/PHresults.aspx. Enter "Population and Housing" section and select "Data Search" (near the top of the left sidebar). From the drop-down boxes, select your state, and "all counties." Select the year (2012) and the year to compare it to (2017). Then select "coastal zone counties."

²www.coast.noaa.gov/digitalcoast/tools/lca.html. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

There have been conversions of larger commercial forest tracts into smaller parcels which has led to some conversion to development. Georgia's forest area statewide has remained stable over the past 50 years at about 24 million acres. However, ownership patterns are changing and average parcel sizes are shrinking. This trend is due to a number of factors, including urbanization and the tremendous divestiture of forest industry-owned lands. Several issues, such as federal, state, and local tax structures and the strength of forest product markets, affect the economic viability of owning and managing forestland. (Sustainability Report for Georgia's Forests: 2019, Georgia Forestry Commission)

Distribution of Land Cover Types in Coastal Counties

Distribution of Land Cover Types in Coastal Counties		
Land Cover Type	Land Area Coverage in 2011 (Acres)	Gain/Loss Since 2006 (Acres)
Developed, High Intensity	34,403.6	5,260.1
Developed, Low Intensity	98,645.5	10,522.8
Developed, Open Space	65,724.6	10,059.4
Grassland	164,058.7	-15,781.8
Scrub/Shrub	431,445.9	67,491.5
Barren Land	30,972.5	3,417.3
Open Water	485,508.9	1,319.2
Agriculture	121,577.5	-4,268.9
Forested	1,001,843.8	-70,662.2
Wetlands	1,658,932.0	-7,338.1

- Using provided reports from NOAA's Land Cover Atlas,³ please indicate the status and trends for developed areas in the state's coastal counties between 1996 and 2016 in the two tables below. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico currently only has data for one time point so will not be able to report trend data. Unless Puerto Rico has similar trend data to report on changes in land use type, it should just report current land use cover for developed areas and impervious surfaces.

Development Status and Trends for Coastal Counties

Development Status and Trends for Coastal Counties			
	2006	2011	Percent Net Change
Percent land area developed	172,931.4 (4.2%)	198,773.7 (4.9%)	25,842.3 (14.9%)
Percent impervious surface area	51,060.8 (1.2%)	58,564.0 (1.4%)	7,503.2 (14.7%)

How Land Use Is Changing in Coastal Counties

How Land Use is Changing in Coastal Counties	
Land Cover Type	Areas Lost to Development Between 2006-2011 (Acres)
Barren Land	1,825.6
Wetland	5,706.9

³www.coast.noaa.gov/digitalcoast/tools/lca.html. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

Open Water	45.1
Agriculture	712.3
Scrub/Shrub	4,646.7
Grassland	6,920.0
Forested	8,292.0

Coastal Georgia has seen an increase in development since 1996. Increasing sprawl and infrastructure expansions were common through the economic downturn around 2007/2008. Since that time we have seen development begin to increase again in more recent years. Many urban areas are beginning to focus on infill development but you still see sprawling development patterns in counties such as Chatham, Effingham, and now Camden. Similarly to question above, it is most likely forested, scrub/shrub and freshwater wetland (and perhaps some agriculture) being converted to development.

** Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in land use for the time period for which high-resolution C-CAP data are available. Puerto Rico and the Northern Mariana Islands do not report.*

4. Briefly characterize how the coastal shoreline has changed in the past five years due to development, including potential changes to shoreline structures such as groins, bulkheads and other shoreline stabilization structures, and docks and piers. If available, include quantitative data that may be available from permitting databases or other resources about changes in shoreline structures.

Between 2015 and 2019 the Coastal Resources Division permitted approximately 300 new or modifications to existing shoreline structures through the authorization in the Coastal Marshlands Protection and Shoreline Protection Acts and Revocable License and Waterbottom Lease authorities. These structures would include private recreational and community docks, marinas, and shoreline stabilization practices such as bulkheads, rip-rap/revetments etc.

Also during this time period, the coast of Georgia was hit by Hurricanes Matthew and Irma in consecutive years, 2016 and 2017. As a result there was a large amount of marine debris produced from impacted coastal structures. Most of the damage associated with Hurricane Matthew was isolated to Chatham County (Savannah, GA). However, because of the centralized track of Hurricane Irma, Camden, Glynn, McIntosh, and Liberty Counties received damage in varying degrees, with the City of St. Marys, GA being the most affected. Hurricane Irma affected approximately 75 miles (+/-) of the 105 mile coastline. The Georgia Department of Natural Resources (DNR) has identified approximately 12,000 cubic yards of marine debris from both Hurricanes Matthew and Irma. Debris was removed through NOAA and state funding. In addition to damage to structures, these storms altered particular shorelines through erosion and alterations of existing dunes.

5. Briefly 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, shoreline hardening, and habitat fragmentation, since the last assessment.
 - 2016 SLAMM (v6.2) run to predict habitat migration and marsh elevation change for the six coastal counties of Georgia using corrected LiDAR-derived DEM and the calibrated marsh accretion models and new salinity data. Models run for a projected 1 m of century sea level rise.

- Living Shoreline Guidance Document
- Update to the Statewide Nonpoint Source Pollution Management Plan
- Water Quality in Georgia Report- GADR Environmental Protection Division
- 2018 Coastal Aerial Imagery
- 2019 Coastal LiDAR
- 2016 Shoreline Characterization Study
- Living Shoreline Site Evaluation Tool

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.

Significant Changes in Management of Cumulative and Secondary Impacts of Development

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

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

Statutes, regulations, policies:

Several new laws were passed in the 2019 Georgia Legislative Session that affect how the state considers the impacts of growth on coastal resources.

- HB 445, Shore Protection Act; *Passed*: HB 445 seeks to redefine and clarify the shoreline jurisdictional line by using three methods:
 - 1) A line 25 feet landward on private and public land from the landward most toe of the most landward sand dunes. This method would be used when there is an existing dune field at the upland/sand sharing system interface.

2) A line 25 feet landward on private and 100 feet on state land from the crest of a visible and functional shoreline or stabilization structure. This method would be used when there is a rock revetment, bulkhead or seawall at the upland, sand sharing system interface.

3) A line 25 feet landward of the ordinary high water mark on private land and 100 feet landward of the ordinary high water mark on state-owned land. This method would be used when there is an eroding shoreline and no dune field present at the upland sand sharing interface.

- HB 201: Liveaboard Legislation: *Passed*; This bill was intended to get a handle on transient vessels and how they operate in our state waters, as well as manage abandoned vessels which very often becoming sunken, derelict. The bill allows the Department to establish where these vessels can anchor at night, allows permitting, requires a pump out log, and establishes no discharge requirements. CRD proposed rules pursuant to HB201, however no implementing rules have been passed to date. HB 201 became effective January 1, 2020 whereby the Commissioner of DNR issued an Administrative Order establishing approved anchorage areas and required setbacks from structures and shellfish harvest areas. More information can be found at www.coastalgadnr.org/liveaboards.
- Shellfish: HB 501: Oyster and Clam Mariculture *Passed and Proposed Rules*; Law and proposed rules will be effective March 1, 2020. Will provide for mariculture development in Georgia. Utilizing a Shellfish Advisory Panel consisting of growers, restaurateurs, shellfish dealers, etc.

These CZM-driven changes and potential impacts include further protection of coastal water quality through the discharge regulations of HB 201 as well as clarification on shoreline jurisdiction to more appropriately capture the dynamic sand resources of the state.

Management Plans:

The Georgia Coastal Nonpoint Source Program received final approval in November of 2018 from EPA and NOAA.

These CZM-driven changes will, moving forward, will allow GCMP to address the Statewide Nonpoint Source Management Plan which is updated every 5 years. GCMP has been implementing a GAEPD Section 319(h) grant over the past year to draft coastal priorities and recommended Coastal Activities for the 2019 Statewide Plan Update. GCMP worked with UGA's Carl Vinson Institute of Government to gather input from the Coastal Nonpoint Source Advisory Committee, represented by a wide array of coastal stakeholders, who provided hours of time drafting revisions and updates for the Coastal Section of the 2019 Statewide Plan Update. The Committee's recommendations have been included in the final plan which was officially adopted in October of 2019. This plan provides a framework of priority activities that can be completed to help reduce nonpoint source pollution statewide. Applicants of the Section 319(h) grants program implemented by EPD will benefit from addressing activities identified in this plan. The final plan can be accessed online at <https://epd.georgia.gov/watershed-protection-branch/nonpoint-source-program>. The 319 grant program can be a great complement to GCMP's Coastal Incentive Grants, as it funds many of the construction based implementation projects that the CIG program cannot.

Enhancement Area Prioritization:

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

High	<u> X </u>
Medium	<u> </u>
Low	<u> </u>

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

Coastal growth (development) and the associated impacts on our coastal resources continues to be a challenging issue to manage in Georgia and was highlighted as the most significant cumulative and secondary stressors or threats within the coastal zone by the Coastal Advisory Council survey. There have been great strides made in the past with sustainable development model ordinances and stormwater management guidance, but much work still needs to be done to implement many of these tools and resources. These issues are also compounded by impacts from climate change such as sea level rise and increased rainfall predictions. The interface of upland runoff and tidal influence has become a new challenge that needs to be addressed in the immediate future.

Resources and Tools:

Below are a few national resources and tools that may be useful in conducting your assessment or developing strategies for cumulative and secondary impacts of development. States likely have other state-specific resources, tools, and data that would be useful as well.

NOAA C-CAP Coastal Land Atlas

The online data viewer provides user-friendly access to regional land cover and land cover change information developed through NOAA's Coastal Change Analysis Program (C-CAP). The tool summarizes land use change trends. Users can investigate how land cover changed between 1996, 2001, 2006, 2011, and 2016. Although data are provided by county, NOAA staff members are able to help states easily aggregate county data into statewide summary.

Geographic Scope: Contiguous United States and Hawaii

Website: www.coast.noaa.gov/digitalcoast/tools/lca.html

NOAA Environmental Sensitivity Index Maps

Environmental Sensitivity Index (ESI) maps are designed to provide a concise summary of coastal resources at risk in case of an oil spill or other disaster. They characterize the type of shoreline (armored, vegetated, beach, etc.) and may be useful for resource characterization and assessment. ESI maps are periodically updated on a state-by-state basis, and are generally available in multiple formats (pdf maps, GIS layers, etc.)

Geographic Scope: All coastal states and territories

Website: www.response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html

NOAA Impervious Surface Analysis Tool

The Impervious Surface Analysis Tool (ISAT), a custom suite of easy-to-use scripts for ArcGIS, is used to calculate the percentage of impervious surface area within user-selected geographic areas, such as watersheds, municipalities, and subdivisions. ISAT uses imperviousness values to categorize areas as

having good, fair, or poor water quality. A correlation between an increase in impervious surfaces and a decrease in water quality has been well established, and ISAT users may find the information derived from ISAT helpful in predicting how different management scenarios might impact local water quality. The tool **calculates** the percent impervious area and total impervious surface area of each selected polygon, **categorizes** polygons to represent conditions of good, fair, and poor water quality based on calculated imperviousness, and **incorporates** land cover change scenarios to examine how changes influence impervious surfaces. Although it requires desktop GIS and some GIS technical skills, NOAA staff members are able to help states analyze data to support wetlands assessment.

Geographic Scope: Appropriate geographic scope should be based upon the resolution and complexity of the data. The tool is built on Esri's ArcGIS, so it will only run as fast as allowed within that software.

Website: www.coast.noaa.gov/digitalcoast/tools/isat.html

NOAA OpenNSPECT Data

OpenNSPECT is the open-source version of the Nonpoint Source Pollution and Erosion Comparison Tool to investigate potential water quality impacts from development, other land uses, and climate change. OpenNSPECT was designed to be broadly applicable. When applied to coastal and noncoastal areas alike, the tool simulates erosion, pollution, and their accumulation from overland flow. The tool **provides** estimates and maps of surface water runoff volumes, pollutant loads, pollutant concentrations, and total sediment loads, **helps** users identify areas that might benefit from changes to proposed development strategies, and **provides** a means to analyze "what if" land use change scenarios. Although it requires desktop GIS and some GIS technical skills, NOAA staff members are available to provide technical assistance.

Geographic Scope: Appropriate geographic scope should be based upon the resolution and complexity of the data. The tool is a plugin for open-source MapWindow GIS.

Website: www.coast.noaa.gov/digitalcoast/tools/opennspect.html

CZMA Performance Measurement System Data

Annual CZMA performance measurement data for coastal community development. The online database can be used to synthesize existing state and territory data reported during the assessment period.

Geographic Scope: All coastal states and territories

Website: www.coast.noaa.gov/czmpm/Login.aspx?ReturnUrl=%2fczmpm%2f

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)¹

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. For ocean-facing states and territories (not Great Lakes states), Ocean Reports² includes existing data for many of these energy facilities and activities.

Status and Trends in Energy Facilities and Activities in the Coastal Zone

¹ CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8), which states:

"The management program provides for adequate consideration of the national interest involved in planning for, and managing the coastal zone, including the siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program." 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.

² www.coast.noaa.gov/digitalcoast/tools/ort.html. Select "Quick Reports" and then enter your state. Select the Quick Reports for "coastal waters" off of your state. Depending on the size of the state, there may be more than one "coastal waters". If so, you will need to add the data from all reports to complete the table. Click on the wind turbine icon on the left ("Energy and Minerals") for information on energy facilities. While outside your coastal zone, you may also want to consider facilities/activities in "Federal Waters" that may have effects on your coastal zone.

Type of Energy Facility/Activity	Exists in Coastal Zone (# or Y/N)	Change in Existing Facilities/Activities Since Last Assessment (↑, ↓, -, unkwn)	Proposed in Coastal Zone (# or Y/N)	Change in Proposed Facilities/Activities Since Last Assessment (↑, ↓, -, unkwn)
Pipelines	Y=2	-	N	-
Electrical grid (transmission cables)	Y	unkwn	Y	-
Ports	Y=2	-	N	-
Liquid natural gas (LNG)	Y=1	-	N	-
Other (please specify)				
Oil and gas	N	-	Y	-
Coal	N	-	N	-
Nuclear	Y (Kings Bay)	-	N	-
Wind	N	-	N	-
Wave	N	-	N	-
Tidal	N	-	N	-
Current (ocean, lake, river)	N	-	N	-
Hydropower	N	-	N	-
Ocean thermal energy conversion	N	-	N	-
Solar	N	↑	Y	-
Biomass	N	-	N	-
Other (please specify)	N (Spaceport)	-	Y	Y

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.

In the 2019 legislative session, the House and Natural Resources and Environment subcommittee approved House Resolution 48, which declared the state's opposition to offshore drilling and seismic testing. The Resolution supports Georgia's coastal tourism and fisheries industries. No additional activity has occurred since the last assessment.

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance³ in the state's coastal zone since the last assessment.

The Georgia Environmental Finance Authority, or GEFA, contains the State's Energy Office and provides annual reports to capture changes in status and trends related to Georgia's energy consumption and activities. The 2019 "Georgia Energy Report", and other annual reports, can be found at <https://gefa.georgia.gov/georgia-energy-report>. No new facilities or energy activities were highlighted since the last assessment, only minor changes within the existing industry (such as transitioning the LNG facility in Savannah to export instead of import).

³ 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).

An activity that of greater than local significance is the proposed Spaceport Camden. In 2018, Camden County, GA submitted an application to the Federal Aviation Administration seeking an operators license for a medium to large rocket launch facility. A facility has been identified in the northern area of the county that was previously used for industrial purposes, including the testing of rocket engines. Now vacant, Camden Co. proposes to redevelop this site for commercial/ private launches. The site is surrounded by saltmarsh and tidal creeks. As rocket launch facilities require the ability to exclude the public from safety zones during launch windows, there has been an ongoing discussions with GCMP, though federal consistency coordination, on how this may temporarily effect public waterways that are used daily by commercial and recreational fishermen and boaters.

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.

Significant Changes in Energy and Government Facility Management

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

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

N/A

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.

While energy facilities (oil and gas, wind, solar) are viable options in coastal Georgia, there are no proposals, currently, to suggest that new development in this area is imminent. However, an outcome of the 2010-2015 309 strategy was the development of an online data portal designed to assist in the siting of projects such as energy and government facilities to minimize conflicts with public resources. Throughout the development of the data portal (GCAMP), GCMP staff also worked closely with state and federal agencies with oversight of these types of projects. The Program is in a good position to address future challenges related to this topic area. For that reason, this area is ranked as a medium priority.

The 2020 survey to the Coastal Advisory Council shows that impacts to coastal resources through Oil and Gas exploration (G&G), Oil and gas production, installation of pipelines, Liquefied natural gas and Military Installations were major concerns. The survey showed that there are conflicting uses with Oil and Gas exploration (G&G) and production, Pipelines, Offshore wind and Military Installations. Insufficient data exists for Wave energy, Solar energy and Offshore wind. Lastly, the coordination of the regulatory processes is critical for Electric transmission cables, Solar, and Military Installations.

Resources and Tools:

Below are a few national resources and tools that may be useful in conducting your assessment or developing energy and federal government facilities strategies. States likely have other state-specific resources, tools, and data that would be useful as well.

GSA Lists of Federally Owned and Leased Facilities

The Government Services Agency (GSA) maintains a national list of all federally owned and leased facilities in each state.

Geographic scope: National

Website: www.gsa.gov/iolp

MarineCadastre.gov Viewer

This data viewer provides the baseline information needed for ocean planning efforts, particularly those that involve finding the best location for renewable energy projects. Users choose an ocean geography and quickly see the applicable jurisdictional boundaries, restricted areas, laws, critical habitat locations, and other important features. With the national viewer, potential conflicts can be identified and avoided early in the planning process, and users can visually analyze and explore geospatial data for marine spatial planning activities and find direct access to authoritative marine cadastral data from federal and state sources.

Geographic Scope: National

Website: www.coast.noaa.gov/digitalcoast/tools/mmc

NOAA Economics: National Ocean Watch Data (ENOW)

The effective management of coastal resources requires an understanding of the ocean and Great Lakes economy. This tool allows users to interact with ENOW data, which describe six economic sectors that depend on the oceans and Great Lakes: living resources; marine construction; marine transportation;

offshore mineral resources; ship and boat building; and tourism and recreation. Users can discover which sectors are the largest in various parts of the county, which sectors are growing and declining, and which account for the most jobs, wages, and gross domestic product. They can view up to four counties, states, or regions to compare trends or the makeup of their ocean and Great Lakes economies. The ENOW Explorer's interface is designed to allow users who are familiar with economic data to interact with and view data and trends. The tool provides the highest level of interaction with ENOW data short of downloading the full data set.

Geographic Scope: National and regional

Website: www.coast.noaa.gov/digitalcoast/data/enow

NOAA Ocean Reports

Allows users to draw or select an area and get in-depth quick reports of coastal and marine areas for ocean-facing coastal states and territories. The tool includes the following types of information: energy and minerals, natural resources and conservation, transportation and infrastructure, economics and commerce, and others.

Geographic Scope: Ocean-facing coastal states and territories (not Great Lakes)

Website: www.coast.noaa.gov/digitalcoast/tools/ort.html

Marine Debris

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

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

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

Resource Characterization:

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

Source of Marine Debris	Existing Status and Trends of Marine Debris in Coastal Zone		
	Significance of Source (H, M, L, unknown)	Type of Impact ¹ (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (↑, ↓, –, unknown)
<i>Land-based</i>			
Beach/shore litter	Seasonally Significant	Various, including aesthetic, personal injury, ecological impacts (ingestion by or entanglement of fish and wildlife)	–
Land-based Dumping	Varies from Low to Moderate	Impacts have been associated unauthorized bank stabilizations projects, sunken and derelict vessels, illegal dumping of materials in coastal marshlands, and dumping of materials that are in violation of ACOE Nationwide Permit 13.	–
Storm drains and runoff	Low	Impacts limited to specific locations. Impacts are limited to sedimentation, trash/garbage, and	–

¹ You can select more than one, if applicable.

		salinity reduction during storm events.	
Fishing-based fishing (e.g., fishing line, gear)	Low	Impacts limited to specific locations, boat ramps and public dock sites.	–
Ocean/Great Lakes-based fishing (e.g., derelict fishing gear)	Low to Moderate	Impacts are localized to traditional commercial fishing communities along the coast of Georgia, destruction of salt marsh, degradation of habitat, navigational hazards, threatening human safety, and ruining aesthetics.	↑ Increase due to hurricane activity (2 named storms) which abnormally increased the number of sunken and derelict vessels
Derelict vessels	Moderate to High	Types of impact can vary from leaking pollutants such as oil and other toxins, navigation hazards, degrading habitat; destruction of salt marsh; entrapping animals and nesting birds; financial burden to local government; threatening human safety; ruining aesthetics, and potential homeland security problem used for illegal activities.	↑ Increase due to hurricane activity (2 named storms) which abnormally increased the number of sunken and derelict vessels
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	Moderate	Impacts are limited to specific areas such as Savannah and Brunswick; these impacts include prop agitation, impacts to fisheries, sewage spills, contaminated bilge discharge, oil release, and litter.	–
Hurricane/Storm	Moderate to High	Impacts are dependent upon storm strength and storm surge. Potential damage could	↑

		cripple economic, environmental, human, and wildlife.	Two named hurricanes made landfall in 2017 and 2018.
Tsunami	Low	Potential damage could cripple economic, environmental, human, and wildlife.	–
Other (please specify)	Moderate	Impacts to water quality from sewage release within the 3-mile limit, littering, increase in derelict vessels, increase in criminal activity along and near the waterway, water hazards, and general marine debris.	<p>↓</p> <p>Effective January 1, 2020 the Live Aboard Act took effect. The new law restricts sewage release in state waters, limits anchorages near public and commercial fishing areas.</p>

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.

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	Y	N
Marine debris removal programs	N	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 and likely future outcomes of the changes.

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.

There was an increased priority in the removal of marine debris related to two name hurricanes in 2017 and 2018 respectively. Monies were provided via the Governor's office

Ocean and Great Lakes Resources

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

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

Purpose: To quickly determine whether 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),¹ indicate the status of the ocean and Great Lakes economy as of 2015 (the most recent data) in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. Note ENOW data are not available for the territories. The territories can provide alternative data, if available, or a general narrative, to capture the value of their ocean economy.

Status of Ocean and Great Lakes Economy for Coastal Counties (2015)

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	26,807	1,364	140	1,071	7,329	26	16,876
Establishments (# of Establishments)	1,202	99	20	18	155	7	903
Wages (Millions of Dollars)	709.6M	40.1M	4.9M	43.4M	326.7M	816K	293.7M
GDP (Millions of Dollars)	1.4B	134.5M	11.1M	88.8M	558.1M	1.2M	615.9M

¹ www.coast.noaa.gov/digitalcoast/tools/enow.html. If you select any coastal county for your state, you are directed to various data displays for that county. In the upper left of the screen, click the "State" box, to the left of the county box so that the state name will be highlighted. Now the data will reflect statewide data for all of the state's coastal counties. Make sure "2015" is selected for the year (top right corner). You can then click through the sector types by selecting the icons along the top and the type of economic data (employment, wages, GDP, etc), by clicking through the icons on the left.

Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2015)²

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	+3,900	+120	-72	-1,173	+3,153	-44	+1,838
Establishments (# of Establishments)	+176	+7	-4	-8	+31	-6	+156
Wages (Millions of Dollars)	+217.75 M	+10.564M	-3.081M	-23.76M	+172.322M	-1.352M	+63.057M
GDP (Millions of Dollars)	+342.88 4M	+19.692M	-9.212M	-59.511M	+299.047M	-3.061M	+95.930M

- Understanding existing uses within ocean and Great Lakes waters can help reduce use conflicts and minimize threats when planning for ocean and Great Lakes resources. Using Ocean Reports³, indicate the number of uses within ocean or Great Lakes waters off of your state. For energy uses (including pipelines and cables, see the “Energy and Government Facility Siting” template following). Add additional lines, as needed, to include additional uses that are important to highlight for your state. Note: The Ocean Reports tool does not include data for the Great Lakes states. Great Lakes states should fill in the table as best they can using other data sources.

Uses within Ocean or Great Lakes Waters

Type of Use	Number of Sites
Federal sand and gravel leases (<i>Completed</i>)	-
Federal sand and gravel leases (<i>Active</i>)	1
Federal sand and gravel leases (<i>Expired</i>)	-
Federal sand and gravel leases (<i>Proposed</i>)	-
Beach Nourishment Projects	2
Ocean Disposal Sites	3
Principle Ports (<i>Number and Total Tonnage</i>)	2 ports/38.5M tons
Coastal Maintained Channels	51
Designated Anchorage Areas	-
Danger Zones and Restricted Areas	1
Other (please specify)	-

- 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.

² The trend data is available at the bottom of the page for each sector and type of economic data. Mouse over the data points for 2005 and 2015 to obtain the actual values and determine the change by subtracting 2005 data from 2015.

³ www.coast.noaa.gov/digitalcoast/tools/ort.html. Go to “Quick Reports” and select the “state waters” option for your state or territory. Some larger states may have the “Quick Reports” for their state waters broken into several different reports. Use the icons on the left hand side to select different categories: general information, energy and minerals, natural resources and conservation, oceanographic and biophysical, transportation and infrastructure, and economics and commerce. Then scroll through each category to find the data to complete the table.

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 (↑, ↓, -, unknw)
Benthic habitat (including coral reefs)	-
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	-
Sand/gravel	↑
Cultural/historic	-
Other (please specify)	-
Transportation/navigation	-
Offshore development ⁴	↓
Energy production	↓
Fishing (commercial and recreational)	-
Recreation/tourism	-
Sand/gravel extraction	↑
Dredge disposal	↑
Aquaculture	↑
Other (please specify)	-

4. For the ocean and Great Lakes resources and uses in the table 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. Place an "X" in the column if the use or phenomenon is a major contributor to the increase.

Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources

	Land-based development	Offshore development	Polluted runoff	Invasive species	Fishing (Comm and Rec)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean Acidification	Other (Specify)
Aquaculture			X		X	X						
Sand/gravel extraction							X					erosion
Dredge disposal					X		X	X		X		

5. 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.

The Coastal Georgia Ecosystem Health Report Card highlights the status and recent trends of certain coastal resources, including living coastal and marine resources and water quality. The report card focuses primarily on species or activities that are within the direct regulatory or management

⁴ Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the "energy production" category.

purview of the GA Department of Natural Resources. First developed in 2014 and now on its 6th iteration, coastal Georgia boasts healthy resources, fisheries and habitats.

<https://coastalgadnr.org/ReportCard>

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?

Significant Changes to Management of Ocean and Great Lakes Resources

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	N
Regional comprehensive ocean/Great Lakes management plans	N	N	N
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.
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) (If yes, specify year completed)	N	N
Under development (Y/N)	N	N
Web address (if available)		
Area covered by plan		

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.

The Ocean Resources Enhancement Area remains a priority for the Georgia Coastal Management Program. However, as a result of the 2011-2016 309 strategy which developed the GA Coastal and Marine Planner and a preliminary Geographic Location Description document for potential offshore activities, the GCMP is currently well positioned to address new applications for uses of ocean resources.

According to a 2020 survey to the Coastal Advisory Council, the stakeholder group that advises the Georgia Coastal Management Program, Living Marine Resources (fish, marine mammals, birds) are under the greatest threat in planning for the use of ocean resources. Benthic Habitat is the second greatest threat. Future threats to ocean resources still include Living Marine Resources as the greatest threat, followed by Benthic Habitat and Sand. The greatest conflict is from Offshore development/energy production followed by fishing (commercial and recreational) and equal conflict exists from Transportation (shipping), Sand/gravel extraction and Dredge disposal.

Resources and Tools:

Below are a few national resources and tools that may be useful in conducting your assessment or developing strategies for ocean and Great Lakes Resources. States likely have other state-specific resources, tools, and data that would be useful as well.

MarineCadastre.gov Viewer

This data viewer provides the baseline information needed for ocean planning efforts, particularly those that involve finding the best location for renewable energy projects. Users pick the ocean geography of their choosing and quickly see the applicable jurisdictional boundaries, restricted areas, laws, critical habitat locations, and other important features. With the national viewer, potential conflicts can be identified and avoided early in the planning process, and users can visually analyze and explore geospatial data for marine spatial planning activities and find direct access to authoritative marine cadastral data from federal and state sources.

Geographic Scope: National

Website: www.coast.noaa.gov/digitalcoast/tools/mmc.html

NOAA Coastal County Snapshots: Ocean Jobs

Provides a snapshot of the economic value of ocean and Great Lakes jobs within a coastal county.

Geographic Scope: Coastal states only. Currently not available for territories.

Website: www.coast.noaa.gov/digitalcoast/tools/snapshots.html

NOAA Economics: National Ocean Watch Data (ENOW)

The effective management of coastal resources requires an understanding of the ocean and Great Lakes economy. This tool allows users to interact with ENOW data, which describe six economic sectors that depend on the oceans and Great Lakes: living resources; marine construction; marine transportation; offshore mineral resources; ship and boat building; and tourism and recreation. Users can discover which sectors are the largest in various parts of the county, which sectors are growing and declining, and which account for the most jobs, wages, and gross domestic product. They can view up to four counties, states, or regions to compare trends or the makeup of their ocean and Great Lakes economies. The ENOW Explorer's interface is designed to allow users who are familiar with economic data to interact with and view data and trends. The tool provides the highest level of interaction with ENOW data short of downloading the full data set.

Geographic Scope: National and regional

Website: www.coast.noaa.gov/digitalcoast/tools/enow.html

NOAA Essential Fish Habitat Mapper

The Essential Fish Habitat Mapper is an online tool that displays essential fish habitat, and habitat areas of particular concern, established under provisions in the Magnuson-Stevens Fishery Conservation and Management Act. The tool also includes areas where steps have been taken to minimize the impact that fisheries have on essential fish habitat, including anchoring restrictions, required fishing gear modifications, and bans on certain types of gear. Users can query information from multiple fishery management plans at once to view habitat maps and lists of species for a specific location. The tool displays habitat maps and species lists for specific locations, **queries** spatial information from multiple fishery management plans at once, and **provides** links to text descriptions and data inventories, including related fishery management plans, federal regulations, and data and metadata download.

Geographic Scope: National and regional

Website: www.coast.noaa.gov/digitalcoast/tools/efhmapper.html

NOAA Ocean Reports

Allows users to draw or select an area and get in-depth quick reports of coastal and marine areas for ocean-facing coastal states and territories. The tool includes the following types of information: energy and minerals, natural resources and conservation, transportation and infrastructure, economics and commerce, and others.

Geographic Scope: Ocean-facing coastal states and territories (not Great Lakes)

Website: www.coast.noaa.gov/digitalcoast/tools/ort.html

OceanData.gov

The National Ocean Council's portal for data, information, and decision tools to support people engaged in regional marine planning for the future use of the ocean, coasts, and Great Lakes.

Geographic Scope: National and regional

Website: www.data.gov/ocean/community/ocean

U.S. Marine Protected Areas Mapping Tool

The U.S. Marine Protected Areas (MPAs) mapping tool is an online application designed to help users visualize MPA boundaries and provide access to MPA Inventory data. This mapping tool provides data on over 1,600 MPAs nationwide, offering easy access to spatial boundaries, conservation-based classification data, and site management information. Managers, scientists, and the public will find a detailed picture of the type, abundance, and distribution of MPAs throughout the United States, gaining an increased understanding and technical capacity for ocean resource protection, management, and

stewardship. The tool **visualizes** patterns and characteristics of MPAs throughout the United States and filters the MPA Inventory in various ways to show only certain MPAs with specific attributes.

Geographic Scope: National and regional

Website: www.coast.noaa.gov/digitalcoast/tools/mpaviewer.html

Public Access

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

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

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

Resource Characterization:

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

Public Access Status and Trends			
Type of Access	Current number ⁷	Changes or Trends Since Last Assessment ⁸ (↑, ↓, —, unkwn)	Cite data source
Beach access sites	95	↓, (loss from hurricanes and also from shoreline revetment and beach dune construction)	CRD Water Access Inventory database and county provided access site databases.
Shoreline (other than beach) access sites	Not currently tracked	Unknown	Has not been surveyed
Recreational boat (power/ nonmotorized) access sites	88	---	CRD water access inventory database
Number of designated scenic vistas or overlook points	Not currently tracked	Unknown	Has not been surveyed
Number of fishing access points (i.e. piers, jetties)	41	---	CRD water access inventory database
Coastal trails/ boardwalks	No. of Trails/ boardwalks Have not been counted	Unknown	Previous assessment

⁷ 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.

⁸ 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 that with a ↑ (increased), ↓ (decreased), — (unchanged). If the trend is completely unknown, simply put “unkwn.”

Public Access Status and Trends			
Type of Access	Current number ⁷	Changes or Trends Since Last Assessment ⁸ (↑, ↓, -, unkwn)	Cite data source
	Miles of Trails/boardwalks 363		
Number of acres parkland/open space	Total sites: 358 680,738 acres	↑ This database <i>increased its sources</i> from 2015 to 2020, so increase is partially from increase in sources but also partially from increase in acquired conservation land.	2019 Conservation Lands of Georgia GIS layer from UGA NARSAL
Access sites that are Americans with Disabilities Act (ADA) compliant ⁹	Beach: 13 Boat: 1 Fishing: 20	Unknown	CRD Water Access Inventory Database, County and Community websites, Ga DNR WRD ADA Fishing database
Other (please specify)			

- 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.⁹ There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,¹⁰ the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,¹¹ and your state's tourism office.

Georgia's coastal population was ranked 28th in population and 26th in density among coastal states in 2010 according to NOAA's State of the Coast National Population Report. From 1970 -2010, Georgia experienced an 82% population increase with a projected increase of 19% by 2020. Tourism is an economic driver in coastal Georgia and having only three beaches accessible by car puts pressure on those islands to maintain adequate beach access, while also creating more resilient shorelines. As for boating and fishing access a recent analysis was completed to assess access distribution and gaps. A spatial analysis performed during the last assessment is still relevant and showed that 47% of the coastal population was within 5 miles of a public water access point and 99% of the population was within 20 miles of a water access site. The 2016 National Survey of Fishing, Hunting and Wildlife-Associated Recreation Addendum has shown that the number of anglers in 2016 was a significant increase from the number in 2006. Therefore, pressure remains to provide access to shoreline fishing sites as well as public access boating sites. The 2014-2016 and

⁹ For more information on ADA see www.ada.gov.

See NOAA's Coastal Population Report: 1970-2020 (Table 5, pg. 9): <http://stateofthecoast.noaa.gov/coastal-population-report.pdf>

¹⁰ 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, SCROPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCROPs at www.recpro.org/scorp-library

¹¹ 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.wsfrprograms.fws.gov/subpages/nationalsurvey/national_survey.htm.

2017-2021 Georgia SCORPs also indicate walking/jogging/running for pleasure and viewing or photographing natural scenery as two of the top five most popular outdoor recreation activities enjoyed by Georgia residents. Based on these activity preferences, conserving and making accessible natural spaces for people to enjoy in coastal Georgia is in demand. Efforts in coastal Georgia continue to conserve important habitats, provide open space, and recreational opportunities.

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.

No recent data or reports specific to coastal Georgia have been completed since the last assessment.

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	Y	Y	Y
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.

Georgia Outdoor Stewardship Act (GOSA) was passed on November 6, 2018 and became effective July 1, 2019. GOSA established a grant program that provides a dedicated funding mechanism for state park stewardship, state lands and wildlife management areas, local parks and trails, and critical conservation land acquisition. This significant change was not CZM-driven nor influenced by previous 309 strategies; however, it will positively influence efforts in the coastal zone in the future in providing further financial resources to support coastal enhancement, conservation and preservation.

3. Indicate if your state or territory has a publicly available public access guide. How current is the publication and how frequently it is updated?¹²

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	No, (Not updated, out-of-print)	Y	N
Web address (if applicable)	N/A	http://georgiaoutdoormap.com/	N/A
Date of last update	2008	2019	N/A
Frequency of update	No plan to update	As needed	

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.

Access to natural resources remains a priority for the Coastal Management Program. The results of a 2020 stakeholder survey of the Coastal Advisory Council members reflected that respondents thought beach access, recreational boat access, and public fishing access sites (piers) was adequate. However, the survey revealed that the amount of open space/conservation lands/parks in the coastal zone is lacking. These responses demonstrate a need for support of the programs in place to acquire new conservation lands but also maintain existing public fishing access, beach access and recreational boat access. These are programmatic areas in which the Coastal Management Program will continue to engage and support.

¹² 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: *(Must be completed by all states and territories.)*

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

Resource Characterization:

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

Geographic Area	Opportunities for New or Updated Special Area Management Plans Major conflicts/issues
Offshore	Conflicting uses; unclear state authorities
Tidal marshes	Development; sea level rise
Shellfish harvest areas	Management; Climate change impacts
River corridors	Upland conversion to development; buffers, water quality
Developed beachfronts	Coastal hazards; sea level rise; sea turtle and bird nesting habitat
Ports	Decreased water quality
Coastal floodplains	Sea level rise; development; habitat loss

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.

No SAMPS have been completed for Georgia.

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.

Significant Changes in Special Area Management Planning

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	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.

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 GCMP ranked this enhancement area as low and will not develop a strategy related to Special Area Management Planning during this time. The geographic areas identified above are currently being addressed in both the local community assistance provided by the GCMP, the current regulatory structure of the GCMP and the existing programs networked with the GCMP. Current and previous 309 strategies have addressed these and have grown the Program's ability to tackle the issues specific to each. Stakeholder input received from the Coastal Advisory Council members suggested that this area is of little concern and although geographic areas could be identified for "recognition", there were no overlapping geographic areas that warranted a SAMP.

Resources and Tools:

Below are a few national resources and tools that may be useful in conducting your assessment or developing SAMP strategies. States likely have other state-specific resources, tools, and data that would be useful as well.

Davis, Braxton. 2004. "Regional Planning in the U.S. Coastal Zone: A Comparative Analysis of 15 Special Area Plans." *Ocean and Coastal Management*. Volume 47, Pages 79 to 94.

Geographic Scope: National

Website: www.sciencedirect.com/science/article/pii/S0964569104000225

Wetlands

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

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. 174 of the CZMA Performance Measurement Guidance³ for a more in-depth discussion of what should be considered a wetland.

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

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

Resource Characterization:

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

Current state of wetlands in 2010 (Percent Area That is Wetland): 45.43%

Coastal Wetlands Status and Trends

Change In Wetlands	from 1996-2010	from 2006-2010
Percent net change in total wetlands (%gained or lost)*	-0.17%	-0.44%
Percent net change in freshwater (palustrine wetlands) (%gained or lost)*	-0.20%	-0.54%
Percent net change in saltwater (estuarine) wetlands (%gained or lost)*	-0.04%	-0.11%

• <https://coast.noaa.gov/czm/media/czmapmsguide2018.pdf>

• <https://coast.noaa.gov/digitalcoast/tools/lca.html>. Note that the 2016 data will not be available for all states until later Summer 2019. NOAA OCM will be providing summary reports compiling each state's coastal county data. The reports will be available after all of the 2016 data is available.

How Wetlands Are Changing*

Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2010 (Sq. Miles)	Area of Wetlands Transformed to Another Type of Land Cover between 2006-2010 (Sq. Miles)
Development	13.57	8.90
Agriculture	1.00	0.01
Barren Land	2.74	1.71
Water	3.83	0.87

• Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in wetlands for the time period for which data are available. Puerto Rico does not report.

Georgia is celebrating the 50th year anniversary of the Coastal Marshlands Protection Act (CMPA) of 1970. Due to the protections offered under this Act over the past 50 years, much of the coastal salt marsh acreage remains the same. Freshwater wetlands permitted through the United States Army Corps of Engineers (ACOE) are replaced through mitigation.

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.

National Wetlands Condition Assessment (2016) – The National Wetland Condition Assessment (NWCA) is a statistical survey of the quality of the Nation's wetlands. The NWCA is designed to determine the ecological integrity of wetlands at regional and national scales, build state and tribal capacity for monitoring and analyses, promote collaboration across jurisdictional boundaries, achieve a robust, statistically valid set of wetland data, and develop baseline information to evaluate progress. Georgia participated in the survey in 2011 and 2016 through collaborations with EPA and the Georgia Environmental Protection Division. A report on the 2016 survey will be released in 2020 and next sampling season will occur in 2021. All data nationally will contribute to the status and trends that are reported to Congress.

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.

Significant Changes in Wetland Management

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.

Statutes, regulations, policies, or case law interpreting these:

A Nationwide Permit 54 (Living Shorelines) was issued by the ACOE in 2017. CRD worked heavily with the ACOE in the development of this nationwide permit and its regional conditions.

Wetlands programs (e.g. regulatory, mitigation, restoration, acquisition):

CRD, through a grant with the Environmental Protection Agency's Wetland Program Development Grant, has met with partners to discuss the viability of salt marsh restoration along the coast through compensatory mitigation. CRD is building upon an existing inventory of impacted wetlands along the coast of Georgia and developing a methodology to assess impacted wetlands through ecological lift starting with the existing inventory. CRD is in the process of identifying suitable sites for restoration that may be sites of opportunity for an In-Lieu-Fee program.

Wetlands Program Updates:

- CRD's Habitat Work Group established in 2014 has continued to guide wetland restoration as it relates to oysters and living shorelines.
- CRD produced a Wetland Program Plan for 2015-2018 that was approved by the Environmental Protection Agency (EPA) in 2015 and was implemented through 2018. CRD is currently in the process of updating the Wetland Program Plan for 2019-2025. The document is a compatible component to Georgia's freshwater Wetland Program Plan that was written by GA DNR Environmental Protection Division. CRD collaborated with EPD on this document to have a comprehensive 5-year strategy for the state's wetland resources. The document is divided into 4 sections: 1) Monitoring and Assessment, 2) Restoration, 3) Regulation, and 4) Water Quality Standards for Wetlands.
- The Living Shoreline Work Group (LSWG), established in 2015, has continued to provide guidance and develop living shorelines in coastal Georgia. This group is comprised of professionals who work to exchange information regarding the planning and design, construction, monitoring and science of living shorelines and other nature-based infrastructure. Many of the members of the LSWG have acted as partners in establishing existing living shorelines and in upcoming projects. The LSWG established monitoring parameters for living shorelines: digitally mapping distribution of native vegetation, areal extent of oyster reef habitat, fixed benthic faunal composition, *Spartina* population dynamics, water quality, erosion rates, invasive species, and nekton habitat usage.
- CRD has continued to provide guidance to private property owners in alternative bank stabilization techniques, such as living shorelines, in lieu of armored shorelines (i.e. bulkheads and riprap).
- Through GCMP funding, the development of a coastal fetch tool for the Analysis of Moving Boundaries Using R (AMBUR) Package is being developed. The coastal fetch tool will produce the quantitative data needed to assist with assessing the potential impacts of wind energy on the shoreline for Georgia's tier 1 coastal counties. This fetch data can be used with existing shoreline change data to determine possible linkages with erosion rates, shoreline type/morphology/composition, and other physical parameters of the estuarine area of Georgia. This tool along with other datasets to be developed will assist with evaluating sites for various shoreline management needs, such as identifying drivers of erosion and locations suitable for potential restoration.
- GCMP partnered with the Coastal Regional Commission and other partners to acquire updated elevation data for the coast. The LiDAR project will provide highly accurate data sets for the coastal counties, including marshes, to be used in research and planning such as restoration projects, etc.
- The GCMP also partnered to acquire updated orthoimagery for the coast. The dataset, flown in 2018, will provide information to coastal managers and researchers that will also be used in restoration, research and planning.

These changes/updates are in part 309 and non-CZM driven but have produced information and guidance that will be utilized by CZM staff and coastal counties in the future. CZM staff have coordinated with and participated in the processes of developing above changes. There have been numerous projects that have contributed to the development of the wetlands program during the previous assessment period. While these may not be considered actual program changes, they demonstrate the amount of work that has been completed on this subject by CRD staff and partners.

Enhancement Area Prioritization:

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

High	<u> X </u>
Medium	<u> </u>
Low	<u> </u>

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

In August 2019, the Coastal Management Section hosted NOAA as they conducted their routine 312 evaluation of our Program. One of the recommendations provided after the evaluation was “The NOAA Office for Coastal Management recommends that the Georgia Department of Natural Resources examine the permit approval process for habitat restoration and nature-based shoreline protection projects to determine possible options for streamlining the process.”

In addition, a survey of the Coastal Advisory Council members in 2020 showed that wetlands in coastal Georgia were most threatened by development/fill and sea level rise. The Council also indicated that the topic area of Wetlands was a high priority among the nine enhancement areas in the 309 strategy.

Resources and Tools:

Below are a few national resources and tools that may be useful in conducting your assessment or developing wetlands strategies. States likely have other state-specific resources, tools, and data that would be useful as well.

NOAA C-CAP Coastal land Atlas

Online data viewer provides user-friendly access to regional land cover and land cover change information developed through NOAA's Coastal Change Analysis Program (C-CAP). The tool summarizes wetland change trends and can highlight specific changes of interest (salt marsh losses to open water, for instance). Users can investigate how land cover changed between 1996, 2001, 2006, 2011, and 2016. Although data are provided by county, NOAA staff members are able to help states and territories easily aggregate county data into a statewide summary.

Geographic Scope: All coastal states and territories (except Puerto Rico)

Website: <https://coast.noaa.gov/digitalcoast/tools/lca.html>

NOAA Environmental Sensitivity Index Maps

Environmental Sensitivity Index (ESI) maps are designed to provide a concise summary of coastal resources at risk in case of an oil spill or other disaster. They characterize coastal and estuarine shorelines for several wetlands classes and may be useful for resource characterization and assessment. ESI maps are periodically updated on a state-by-state basis, and are generally available in multiple formats (pdf maps, GIS layers, etc.)

Geographic Scope: All coastal states and territories

Website: <http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html>

NOAA High-Resolution C-CAP Data

Nationally standardized database of land cover information (developed using remotely sensed imagery) for the coastal regions of the United States. C-CAP products provide inventories of coastal intertidal areas, wetlands, and adjacent uplands. High-resolution C-CAP products focus on bringing NOAA's national mapping framework to the local level by providing data relevant for addressing site-specific management decisions. Although this product requires desktop GIS and some GIS technical skills, NOAA staff are able to help states analyze data to support wetlands assessment.

Geographic Scope: Targeted watershed and other hotspots in the Caribbean, Pacific Islands, and Monterey Bay, California

Website: www.coast.noaa.gov/digitalcoast/data/ccaphighres.html

CZMA Performance Measurement System Data

Annual CZMA performance measurement data for government coordination and habitat measures. The online database can be used to synthesize existing state and territory data reported during the assessment period. Note: Only CMP staff with permission to enter performance measurement data are able to access the database through their assigned account.

Geographic Scope: All coastal states and territories

Website: www.coast.noaa.gov/czmpm/Login.aspx?ReturnUrl=%2fczmpm%2f

NOAA Sea Level Rise and Great Lakes Level Change Viewers

The Sea Level Rise Viewer displays potential future sea levels and provides simulations of sea level rise at local landmarks, including modeling potential marsh migration due to sea level rise. The viewer overlays social and economic data onto potential sea level rise and visualizes how tidal flooding will become more frequent with sea level rise. The Great Lakes Level Change Viewer creates visuals that capture lake level changes that range from six feet above to six feet below historical long-term average water levels in the Great Lakes. Potential shoreline and coastal impacts are also provided.

Geographic Scope: All coastal states and territories except for Alaska.

Website: www.coast.noaa.gov/digitalcoast/tools/slr.html (Sea Level Rise Viewer)

or www.coast.noaa.gov/llv/ (Great Lakes Level Change Viewer)

Coastal Hazards

In-Depth Resource Characterization:

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

1. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards¹ within your coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone, or are there specific areas most at risk?

	Type of Hazard	Geographic Scope (throughout coastal zone or specific areas most threatened)
Hazard 1	Flooding	Coast-wide
Hazard 2	Shoreline erosion	Coast-wide
Hazard 3	Hurricanes	Coast-wide

2. 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.

In 2016 and 2017 the coast of Georgia was impacted by hurricanes Matthew and Irma. Prior to these events, the area had not experienced an event in over 50 years, leaving local communities to guess what those impacts may be. These storms gave an up-close assessment and view of just how vulnerable the coast is to flooding, erosion, and hurricanes. All three developed beach communities found themselves unprepared pre and post storm for the effects of erosion and hurricane damages. In 2018, a Beach Summit was held for all communities in which all stakeholders demonstrated a need for assistance to help make their shorelines more resilient to erosion, hurricane impacts and flooding.

Flooding was felt up and down the coast and seen in places where EMAs and floodplain managers weren't prepared. Now local governments are left knowing that mitigation and adaptation are needed but need guidance on how to proceed and how to be more resilient.

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
High-tide flooding	Future Frequency, reach, risk when combined with stormwater

In-Depth Management Characterization:

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

¹ See list of coastal hazards on pg. 24 of this assessment template.

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.

Significant Changes in Coastal Hazards Statutes, Regulations, and Policies

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)
Shorefront setbacks/no build areas	y	y	y
Rolling easements	n	y	n
Repair/rebuilding restrictions	y	y	n
Hard shoreline protection structure restrictions	y	y	n
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	y	y	n
Repair/replacement of shore protection structure restrictions	y	y	n
Inlet management			
Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	y	y	n
Repetitive flood loss policies (e.g., relocation, buyouts)	y	y	n
Freeboard requirements	n	y	n for state y for local
Real estate sales disclosure requirements	n	n	n
Restrictions on publicly funded infrastructure	n	y	n
Infrastructure protection (e.g., considering hazards in siting and design)	n	y	n
Other (please specify)			

Significant Changes to Coastal Hazard Management Planning Programs or Initiatives

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)
Hazard mitigation plans	y	y	y
Sea level rise/Great Lake level change or climate change adaptation plans	y	y	y
Statewide requirement for local post-disaster recovery planning	n	y	y
Sediment management plans	n	n	n
Beach nourishment plans	n	y	n
Special Area Management Plans (that address hazards issues)	n	n	n
Managed retreat plans	n	n	n
Other (please specify)			

Significant Changes to Coastal Hazard Research, Mapping, and Education Programs or Initiatives

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)
General hazards mapping or modeling	y	y	y
Sea level rise mapping or modeling	y	y	y
Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)	y	y	y
Hazards education and outreach	y	y	y
Other (please specify)			

- 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?

The GCMP has not conducted a specific study to look at the effectiveness of the Coastal hazards Program, but rather rely on our constituent's feedback, continued request for services, etc. The Georgia Emergency Management Agency looks to the GCMP's Coastal Hazards Program to provide Climate Change mitigation technical assistance to the State Hazard Mitigation Plan. The Georgia Department of Community Affairs has requested the input of the GCMP to develop the State's CDBG-DR Action Plan. The GCMP Coastal Hazards Program has been asked to present at National Conferences and write articles in Journals on the work of the program. The Coastal States Organization has asked the GCMP to co-lead the Coastal hazards and Adaptation Planning Workgroup. These demonstrate a strong positive effectiveness of the efforts of the program.

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: Shoreline Erosion Resiliency

While the GCMP has a good understanding of where our shorelines are changing, both through erosional and accretional processes, we aim to offer better shoreline resiliency adaptation measures that adhere to state laws/policies and are nature-based, where applicable. The GCMP would like to provide technical assistance to local governments, similar to the services we offer to private property owners, in shoreline assessments, guidance and adaptation steps.

Management Priority 2: Providing Stormwater Flooding Resiliency

While the GCMP has made great strides working with coastal communities to address stormwater flooding, we are still in need of better hydrological modeling where stormwater flooding meets tidal flooding. Our communities also are need of resiliency adaptation and mitigation steps to address this interface flooding issue. This risk continues to grow and we anticipate an increased need with climate change, and specifically sea level rise, continuing to drive risks.

Management Priority 3: Providing Hurricane, High-tide flooding and sea-level rise Resiliency

A great deal of work has gone into planning for hurricanes, high tide flooding and sea level rise, however, an updated vulnerability assessment is overdue. Our communities have multiple plans but often need a simplistic checklist approach to ensure they are ready. A re-occurring need that has been discussed is a Resiliency check list. With multiple hurricanes impacting Georgia in the last several years and multiple funding streams available, our coastal communities need a better method to prioritizing mitigation and adaptation steps with resiliency incorporated into as many actions as possible.

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	
Mapping/GIS/modeling	Y	A hazard vulnerability assessment modeling update is needed to include social (census), physical (flooding, fetch) and biological parameters (habitat shifts, etc)
Data and information management	Y	Updated census data for SoVi is needed for inclusion into a vulnerability assessment tool

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Training/Capacity building	N	
Decision-support tools	Y	The Habitat Vulnerability Assessment hasn't been updated for the entire coast of Georgia and will need to be modified so that all ocean-facing counties can have this information.
Communication and outreach	Y	Continued outreach with local governments on resiliency adaptation and mitigation is a need in all of Coastal Georgia
Other (specify)		

Enhancement Area Strategy Development:

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

Yes X

No

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

The Coastal Hazards enhancement area is one built into the proposed strategy. The area has been highlighted as important to our Coastal Advisory Council survey. Specifically, the survey concluded that the coast of Georgia is vulnerable to flooding, coastal storms, sea level rise and shoreline erosion as the top priorities. Staff have identified each of these areas as important areas to focus in the upcoming 5 years strategy. This enhancement area will strengthen the GCMP communication with local communities by developing information, mapping, and decision support tools to better provide outreach and education to communities and the public at risk.

Cumulative and Secondary Impacts

In-Depth Resource Characterization:

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

1. What are the three most significant existing or emerging cumulative and secondary stressors or threats within your 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	Stormwater Runoff	Water Quality	More urbanized areas
Stressor 2	Shoreline modification	Habitat loss	coastwide
Stressor 3	Sprawling growth patterns	Habitat loss, water quality and public access	coastwide

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.

Polluted runoff is a main stressor and threat in coastal Georgia. The most common source of polluted runoff is from nonpoint source pollution and primarily stormwater runoff. As Coastal Development (a related stressor/threat) has continued to increase stormwater management has become a growing concern. The GCMP has encouraged local governments to adopt the Coastal Stormwater Supplement (CSS) which provides comprehensive guidance on an integrated, green infrastructure-based approach to natural resource protection, stormwater management and site design that can be used to better protect coastal Georgia's unique and vital natural resources from the negative impacts of land development and nonpoint source pollution. This document (or equivalent) has been required as the stormwater management guidance document for all coastal counties, but some smaller communities still struggle with full implementation due to staff constraints and unfamiliarity with some of the Green Infrastructure (GI)/Low Impact Development(LID) Practices identified. Additionally, some regulated communities will begin to face new NPDES permit requirements which will require these local governments to utilize GI/LID practices.

GCMP has hosted several (GI)/LID trainings over the past several years and the consistent feedback from practitioners is that coastal Georgia faces unique challenges in stormwater management due to consistently high local water tables and increasing sea levels. Local governments are beginning to see tidal impacts to existing stormwater infrastructure which is causing flooding issues, increased infrastructure costs, and changes to water quality impacts.

Shoreline Modification is also a concern due to our highly active shorelines and the common action to armor these shorelines in response to encroachment from erosion. GCMP staff has been working over several years to research the applicability of Living Shorelines as an alternative to armored shorelines in coastal Georgia and have supported several demonstration sites as part of that process. Living shorelines can provide a natural habitat resource as compared to the bulkheads and other armoring techniques commonly seen in coastal Georgia which remove that habitat from the equation.

The GCMP has funded several Coastal Incentive Grant projects that have identified these issues through research and analysis in coastal Georgia.

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
Stormwater infrastructure with Sea Level Rise	SW Infrastructure mapped with elevation, drainage assessments, tidal reach studies
Compounding impacts of storm surge and riverine flooding during a hurricane	Methodology for modelling these two impacts together

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the cumulative and secondary impacts (CSI) 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.

Significant Changes to Management of Cumulative and Secondary Impacts of Development

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	Y	Y	N
CSI research, assessment, monitoring	Y	Y	Y
CSI GIS mapping/database	Y	Y	Y
CSI technical assistance, education and outreach	Y	Y	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.

Research, Assessment, Monitoring: The GCMP funds projects annually through the Coastal Incentive Grant Program (NOAA Section 306 funding). There have been several recent projects to research or address through management cumulative and secondary impacts of development in coastal Georgia. Examples of projects include the Coastal Georgia Low Impact Development BMP Inventory directed project, City of Brunswick Stormwater Utility Feasibility Study, Savannah-Chatham MPC Red Zone Water Supply Management Plan and Smart Design Parking Lots projects, City of Savannah Factors Walk Green Roof Design and Habersham Village Stormwater Management projects, Tybee Island Carrying Capacity Study Implementation, Chatham County CRS and Sea Level Rise Impacts on Stormwater Systems project, City of Rincon Stormwater Utility project, Charlton County Spanish Creek Watershed Management Plan, and the Chatham County Adopt-A-Drain Stormwater Pollution project.

The GCMP has also supported through 309 funding the development of risk assessments in two coastal communities. GCMP partnered with researchers to demonstrate how a coastal community can become more resilient to future flooding events, including inland riverine flooding as well as coastal flooding from storm surge. The project modeled different land use scenarios to show what the reduced flooding impacts would be if the community incorporated Green Infrastructure alternatives such as bioswales, pervious concrete, green roofs, wetland conservation and dune restoration/enhancement. GCMP also partnered with the Carl Vinson Institute of Government to create a coastal resilience planning guide which will include a suite of model ordinances as well as outline the step-by-step process for adopting the ordinances. In addition, the guide will directly connect the CRS benefits of adopting the Model Ordinances provided.

GIS Mapping/Database: GCMP staff has been involved in several projects either acquiring or analyzing new GIS layers that can be used to assess cumulative and secondary impacts in coastal Georgia. These are CZM-driven changes. The following are some examples of most recent projects:

- GCMP partnered with NOAA, Coastal Regional Commission, and GA Department of Natural Resources to acquire aerial imagery for the coastal counties of Glynn, Chatham, Effingham, Liberty, and McIntosh. GCMP funding assisted with costs to the counties as well as cover costs of planimetrics and project administrative services. The imagery is 6 inch resolution. The high resolution imagery made it possible to derive planimetrics on docks/structures located in the marsh. Having a GIS polygon layer, managers can calculate potential debris fields, waterway hazards, associated redevelopment costs, and have a regional snapshot of existing conditions. The regional imagery and dock structures provide a regional baseline that can be referenced in the event of a coastal hazard. This data layer can also be compared to prior imagery and planimetrics data for comparisons over time.
- The GCMP partnered with Coastal Regional Commission and USGS for the Coastal Georgia LiDAR (Light Detection and Ranging) Program (through the USGS Geospatial Product and Service Contract/USGS 3D Elevation Program Grant). All 11 coastal counties are included at 0.7 meter spacing, 9.25 cm accuracy. Elevation data gathered from flying LiDAR has a variety of uses and

applications. LiDAR is used in sea level rise and storm surge modeling, hydrodynamic modeling, shoreline mapping, watershed assessments, habitat identification, and vulnerability analysis.

- The Coastal Low Impact Development (LID) Best Management Practices Inventory was completed as a directed project in 2017/2018 to create a database of stormwater practices in Georgia's 11 coastal counties. An inventory of LID BMPs will benefit coastal communities by providing on-the-ground examples and information to assist future project development. The inventory will also serve as an educational resource for engineers, planners, developers, practitioners, and local governments. The online inventory mapped can be accessed at <https://coastalgadnr.org/DemoSites>.

Technical Assistance; Outreach; Education:

The GCMP has implemented two Section 319(h) Nonpoint Source Management Grants that have assisted with implementation of the Coastal Nonpoint Source Management Program goals. These grants have allowed for GCMP staff to develop and host trainings and outreach efforts including several Low Impact Development Stormwater Practice Trainings (Permeable Pavement Exhibition, Panel and Site Tour, Bioretention Design and Site Tour, and Bioretention Construction and Site Tour). GCMP staff also facilitated a stakeholder engagement process to update the Coastal section to the Statewide Nonpoint Source Management Plan in 2019. Staff continues to assist a coastal county with implementation of a Better Back Roads BMP installation project and has also worked with several partners to update the WelSTROM online well and septic mapping website which can be found at www.WelSTROM.com/Coastal. These efforts were CZM driven changes through technical assistance efforts. GCMP staff hopes to continue working on developing new training opportunities and will continue to engage the stakeholders that participated in the Statewide NPSP Update.

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?

Data collected as part of the Coastal GA LID Inventory is intended to provide information on the types of LID practices that have been successful in coastal Georgia. Coastal communities will have access to data about practices (i.e. land use, practice type, maintenance condition, specifications, costs), along with photographs and summary reports organized by county. Summary data can be used to support the design, development, permitting of future projects in coastal communities. This inventory will also be utilized as a resource to increase coastal practitioner's familiarity with LID practices to encourage their use more regularly.

Staff continues to provide assistance to local governments in utilizing updated project data for managing CSI in their communities.

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: Addressing Sea Level Rise in Coastal Stormwater Management

Description: Local governments are beginning to see tidal impacts to existing stormwater infrastructure which is causing flooding issues, increased infrastructure costs, and changes to water quality impacts. Detailed tidal and infrastructure elevation data would be helpful in researching potential approaches to address this issue.

Management Priority 2: Implementation of Developed Outreach Tools

Description: There are several tools and resources available to local governments to address CSI such as the Coastal Stormwater Supplement. But many local governments face hindrances to implementation (staffing, budget etc). Each local government has unique needs and it could be helpful to focus technical assistance for each community to assist with identifying their unique needs and assisting with implementation of previously developed management plans or guidance documents on a case by case basis.

Management Priority 3: _____

Description:

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	Tidal Reach with Sea Level Rise
Mapping/GIS	Y	SW Infrastructure Elevations, Drainage Assessments
Data and information management	N	
Training/Capacity building	Y	Ongoing need to build local capacity in implementing smart growth management techniques
Decision-support tools	N	
Communication and outreach	Y	Assistance with <i>implementation</i> of tools developed, focusing on individual community needs
Other (specify)	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.

The GCMP will address Cumulative and Secondary impacts in this strategy specifically to highlight the risk from cumulative and secondary stressors to coastal habitats, including wetlands, beaches, forests, etc). This strategy will address three areas of greatest need in order to address cumulative and secondary impacts: research, education and outreach, and technical data (including GIS data and tools). These stressors and subsequent needs were identified in the 2020 survey to the Coastal Advisory Council.

Wetlands

In-Depth Resource Characterization:

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

1. What are the three most significant existing or emerging physical stressors or threats to wetlands within your coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout your coastal zone, or are there specific areas that are most threatened? Stressors can be development/fill; hydrological alteration/channelization; erosion; pollution; invasive species; freshwater input; sea level rise/Great Lakes 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	Shoreline Erosion	Coast-wide
Stressor 2	Upland Development Encroachment	Coast-wide
Stressor 3	Sea Level Rise	Coast-wide

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

Shoreline Erosion: Shoreline erosion causes loss of habitat as well as loss of upland. What most property owners are concerned with, however, is the loss of their upland property. Hardened structures are often the route that property owners take to stabilize eroding shorelines because of the ease of the regulatory process as compared to nature-based solutions for shoreline protection. Regulatory agencies are supportive of nature-based solutions, there is simply a lack of familiarity in project scopes given that these techniques are still sometimes considered novel which requires a more lengthy review process. If standards were developed and the permitting process were more direct for nature-based shoreline projects, then homeowners would have a shoreline protection technique that would still prevent the erosion to their upland property but also enhance and/or create habitat along that shoreline. Much research has been conducted in NC to determine effectiveness of living shorelines structures and their integrity during storms. These studies are supportive of non-traditional, nature-based methods being successful in the southeast.

Upland Development Encroachment: As development encroaches closer and closer to wetland boundaries, wetlands have fewer adjacent areas with higher elevations to migrate in order to alleviate the stressors associated with changing environmental conditions such as sea level rise. In areas of development close to wetlands, there is often shoreline erosion, which property owners are mainly concerned with due to the loss of their upland property as the wetland erodes. To stave off the erosion of the upland most property owners will often construct some form of shoreline protection. The shoreline protection often comes in the form of hardening the shoreline with grey structures such as bulkheads or riprap. With these types of structures, wetlands no longer have the ability to migrate/expand as they would otherwise.

Sea Level Rise: Rising water levels will cause flooding to wetlands and a shift of the wetlands inland. Through the Sea Level Affecting Marshes Model (SLAMM) we see that coastal squeeze during sea level rise will alter estuarine wetlands. As sea levels rise and water levels change, areas that are armored with hardened structures will not allow for migration/expansion to adapt to those changing conditions. This will eventually lead to the loss of estuarine wetlands.

- 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
Sea level rise (including coastal squeeze)	Habitat maps, habitat vulnerability assessments
Development and subsequent shoreline armoring that inhibits wetland migration	Understanding of impacts from armored shorelines adjacent to habitats vulnerable to SLR, better understanding of regulatory processes for shoreline management; better understanding of shoreline change in smaller, developed tidal creek systems

In-Depth Management Characterization:

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

- 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.

Significant Changes in Wetland Management

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

- 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.
 - Describe significant changes since the last assessment;
 - Specify if they were 309 or other CZM-driven changes; and
 - Characterize the outcomes or likely future outcomes of the changes.

Living Shoreline monitoring: Since the last assessment, GCMP staff have developed wetland assessment methodologies related to living shorelines. These monitoring techniques are based on biological characteristics to show how projects are living up to habitat expectations. The purpose of developing these techniques was to share these protocols with other partners that are monitoring living shorelines so that collectively Georgia can speak on successes and challenges.

Fetch tool development: Many physical environmental variables are important in determining the success of shoreline projects (marshes and beaches) in coastal and estuarine and marine environments, including geomorphological setting (i.e., shoreline character), shoreline change (i.e., erosion) rates, salinity, and exposure to physical energy (i.e., fetch). Fetch is one of the most significant variables for which we do not have quantitative data. Fetch in simple terms is the area over which wind can blow. In coastal applications, water fetch is important because the larger the area over water that wind can blow, the greater the potential to produce higher waves and stronger currents potentially threatening the shoreline with erosive forces.

GCMP is working with researchers to use WEMO and AMBUR (Analyzing Moving Boundaries Using R, a cutting-edge analytical tool written in R) to develop these data for the Georgia coast, thereby producing the quantitative data we need to assess the incident energy at sites of interest better. A goal is to compare fetch data derived from the AMBUR and WEMO with existing shoreline change and determine possible linkages with erosion rates, shoreline type/morphology/composition and other physical parameters for the estuarine area of Georgia. The tool will be used to analyze potential energy inputs for project sites to evaluate sites for shoreline management, including the application of nature-based infrastructure.

Outreach and education: Since the last assessment, the GCMP has increased outreach and education activities related to the GCMP mission and wetlands area by adding partial biologist staff time that work on these tasks. As a result, there has been increased presence with the research community, coastal schools and civic organizations to talk about the importance of Georgia's wetlands and how they are actively being managed.

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?

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: Evaluation of Permitting for Habitat Restoration and Nature-Based Shoreline Protection Projects

Description: By evaluating the permitting process for habitat restoration projects and nature-based shoreline habitat restoration projects (i.e. living shorelines) GCMP staff will have a better ability to communicate the process to interested property owners and process authorizations consistently.

The overall goal is for nature-based techniques to be a tool in the GCMP toolbox for those property owners interested.

Management Priority 2: Shoreline Resiliency

Description: Community outreach and education of shoreline resiliency and nature-based shoreline protection solutions as an alternative for current erosional protection practices is a critical need. Concurrently, however, GCMP seeks to understand the remaining important questions that property owners and managers are seeking (i.e. are living shorelines stable in Georgia's high tidal environment? How much maintenance is required for living shorelines in Georgia?). GCMP seeks to have a greater understanding of the science and policy of living shorelines in order to more effectively educate property owners, managers and partners of these nature-based techniques.

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	Sea Level Rise impacts to shorelines
Mapping/GIS	Y	Shoreline change data for smaller tidal creeks
Data and information management	Y	Science on the stability of living shorelines; maintenance needs of living shorelines;
Training/capacity building	N	
Decision-support tools	N	
Communication and outreach	Y	Increase outreach/communication with public, contractors, engineers, and local authorities about nature-based solutions
Other (specify)	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.

A strategy for closely evaluating the permitting process for habitat restoration and nature-based shoreline protections projects will be developed for this enhancement area with intentions to streamline/incentivize where possible. Additionally, we will address questions raised by managers and property owners to address the effectiveness of living shoreline in coastal Georgia's high tidal system. This strategy aligns with one of the recommendations that NOAA provided to our Program during its evaluation in August 2019, "The NOAA Office for Coastal Management recommends that the Georgia

Department of Natural Resources examine the permit approval process for habitat restoration and nature-based shoreline protection projects to determine possible options for streamlining the process.” Also, this approach aligns with survey results from the Coastal Advisory Council in 2020 and GCMP staff priority needs.

Georgia Section 309 Assessment and Strategy 2021 to 2025 Cycle

Stakeholder Engagement

In accordance with NOAA's Section 309 Program Guidance, the Georgia Coastal Management Program recently solicited the input and advice of stakeholders to carefully consider GCMP priorities during its 2021-2025 assessment and strategy development process. The GCMP identified its Coastal Advisory Council (CAC) as the primary stakeholder group to engage in the 309 process due to their existing familiarity with the GCMP and past and current 309 activities. At the CAC's quarterly meeting in January 2020, the GCMP introduced the 2021 to 2025 309 Cycle, noted the process for evaluating Phase I and Phase II assessments, and highlighted the role of stakeholder input in ranking the nine 309 Enhancement Areas and identifying emerging threats and opportunities.

Following the meeting, GCMP opened an online survey (Survey Monkey) for Coastal Advisory Council members to respond to various considerations under each of the nine 309 Enhancement Areas. The survey was directly issued to the 16 Council members (<https://coastalgadnr.org/CoastalAdvisoryCouncil>) for feedback. Eleven responses were received. The survey assessed stakeholder opinions on the following topics: adequacy of public access in the coastal zone; challenges in siting government and energy facilities; greatest threats to coastal resources from coastal development and greatest needs to protect resources; vulnerability of coastal Georgia to natural hazards; significant challenges facing aquaculture development on the coast; opportunities to develop special areas management plans; greatest threats to coastal wetlands and needs for protecting them; greatest threats to and conflicts with ocean resources and activities; and management of marine debris.

Finally, respondents were asked to rank the priority (high, medium, low) of each 309 Enhancement Area, with the following results in order of stakeholder priority:

- | | |
|---------------------------------------|-----------------------------------|
| 1 – Cumulative and Secondary Impacts | 6 – Special Area Management Plans |
| 2 – Wetlands | 7 – Aquaculture |
| 3 – Ocean Resources | 8 – Marine Debris |
| 4 – Coastal Hazards | 9 – Public Access |
| 5 – Government/Energy Facility Siting | |

Stakeholder responses are cited throughout the Phase I and Phase II assessments.