

2021-2025

SECTION 309 ASSESSMENT & STRATEGY REPORT

COMMONWEALTH OF
THE NORTHERN
MARIANA ISLANDS

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Division of Coastal Resources Management
Bureau of Environmental and Coastal Quality
Office of the Governor
Commonwealth of the Northern Mariana Islands



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List of Acronyms

A&S	Assessment & Strategy
AMP	National Park Service-American Memorial Park
APC	Area of Particular Concern
BECQ	CNMI Bureau of Environmental and Coastal Quality
BMPs	Best Management Practices
CAP	Conservation Action Plan
CELCP	Coastal and Estuarine Land Conservation Plan
CMP	Coastal Management Program
CNMI	Commonwealth of the Northern Mariana Islands
CRI	CNMI Coral Reef Initiative
CRM	Coastal Resources Management
CUC	Commonwealth Utilities Corporation
CPA	Commonwealth Ports Authority
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DCRM	CNMI Division of Coastal Resources Management
DEQ	CNMI Division of Environmental Quality
DFW	CNMI Division of Fish and Wildlife
DLNR	CNMI Department of Lands and Natural Resources
DLNR MCP	DLNR Marine Conservation Plan
DOD	Department of Defense
DPL	CNMI Department of Public Lands
DPW	CNMI Department of Public Works
ENSO	El Niño-Southern Oscillation
EVS	Economic Valuation Study
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GIS	Geographic Information System
GMSL	Global Mean Sea Level
HIES	Household Income and Expenditures Survey
HPO	Historic Preservation Office
HANMI	Hotel Association of the Northern Mariana Islands
HSEM	CNMI Office of Homeland Security and Emergency Management
JAMS	Johnston Applied Marine Sciences
LID	Low impact development
MINA	Micronesia Islands Nature Alliance
MVA	Marianas Visitors Authority
MOS	Mayor's Office of Saipan
MPA	Marine Protected Area
MSO	Marine Sports Operator
OCM	NOAA Office for Coastal Management
NPS	National Park Service
NWI	National Wetlands Inventory
NMC	Northern Marianas College
A&NR	NMC Aquaculture & Natural Resources Program
CREES	NMC Cooperative Research Extension and Education Service
NEPA	National Environmental Policy Act
NMIAC	Northern Mariana Islands Administrative Code
NOAA	National Oceanic and Atmospheric Administration

NMHC	Northern Marianas Housing Corporation
OCM	NOAA Office of Coastal Management
OPD	Office of Planning & Development
PCRPP	Pacific Coastal Research & Planning
PDO	Pacific Decadal Oscillation
RAM	Rapid Assessment Methodology
RAEC	Rota Aquaponics Education Center
RCRA	Resource Conservation and Recovery Act
ATOLL	Aquaculture Training and On-line Learning
SAMP	Special Area Management Plan
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SLC	Sea Level Change
SLR	Sea Level Rise
SLUEP	Saipan Lagoon Use Education Plan
SLUMP	Saipan Lagoon Use Management Plan
SSG	Smart, Safe Growth
SSMP	Standard State Mitigation Plan
SVAP	Stream Visual Assessment Protocol
TMDL	Total Maximum Daily Load
USFWS	US Fish and Wildlife Service
USACE	US Army Corps of Engineers
USDA-NIFA	US Department of Agriculture – National Institute of Food and Agriculture
UXO	Unexploded Ordnance
VA	Vulnerability Assessment

Introduction

The Coastal Zone Enhancement Program, established in 1990 under Section 309 of the U.S. Coastal Zone Management Act (CZMA), encourages state and territorial coastal management programs (CMPs) to strengthen and improve their federally approved coastal management programs in one or more of nine areas. These “enhancement areas” include wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans, ocean and Great Lakes resources, energy and government facility siting, and aquaculture. Every five years, states and territories are encouraged to conduct self-assessments of their coastal management programs to determine problems and enhancement opportunities within each of the nine enhancement areas—and to assess the effectiveness of existing management efforts to address identified problems. Each coastal management program identifies high-priority management issues, as well as important needs and information gaps the program must fill to address these issues.

Following this self-assessment, the Office for Coastal Management (OCM), under the National Oceanic and Atmospheric Administration (NOAA), works closely with each CMP to further identify the high-priority needs for improvement within one or more of the nine areas. The coastal management program then develops strategies, consulting with OCM, to improve its operations to address these management needs. The strategies provide a stepwise approach to reach a stated goal and lead to enhancement in the state’s or territory’s federally approved coastal management program. OCM reviews and approves the Section 309 “assessment and strategy” document for each state and territory and, after approval, provides funding under Section 309 to help them carry out those strategies. All CMPs are required to complete this assessment and strategy process and develop an approved Section 309 Assessment & Strategy (A&S) report in order to be eligible for Section 309 funding during the next five-year enhancement cycle, in this case 2021-2025.

This document represents the Section 309 A&S Report for the Commonwealth of the Northern Mariana Islands (CNMI), prepared by the Division of Coastal Resources Management (DCRM) within the Bureau of Environmental and Coastal Quality (BECQ) under the CNMI Office of the Governor. This 309 A&S was developed based on research on existing programs with input from a wide variety of stakeholders, both public and private. The Section 309 A&S process places emphasis on engagement from stakeholders and the public. As part of this process, stakeholder agencies and non-governmental organizations were invited to complete an online survey in which participants were asked to rank the nine enhancement areas and describe the priority areas of concern or need. The public was again asked to provide feedback on a final draft of this document during a 30-day comment period in June to July 2020. At this time the draft document was made available for review on DCRM’s website, and the public was notified of the comment period via DCRM’s social media accounts.

Based upon stakeholder feedback combined with an internal assessment of each enhancement area’s resource characterization, DCRM’s management characterization, and current or projected threats to each enhancement area, DCRM identified two high-level priorities from the list of nine areas: Wetlands and Coastal Hazards. Stakeholder feedback was obtained through email and website-based surveys, as well as soliciting feedback through DCRM social media, following lack of

response from stakeholders to engage in person. Additionally, three sets of interviews were conducted opportunistically with CNMI experts in specific fields to gather data and feedback for energy and government facility siting, aquaculture, and coastal hazards. Overall, sixteen survey responses were received, and priority rankings were generated based on overall unweighted counts for top three enhancement areas per stakeholder, as reflected in section 5 of this document (Summary of Stakeholder Engagement and Public Comment).

Two strategies were developed for the priority enhancement areas of wetlands and coastal hazards, which had the highest values for both weighted and unweighted counts for all stakeholder surveys. DCRM concurred that these should be the main enhancement areas, upon completion and evaluation of the Phase I assessment, and were also areas that feasible program changes could be made. Wetland jurisdiction between resource agencies in the CNMI overlaps based upon laws and regulations, which continues to be a challenging area for inter-agency collaboration. DCRM manages wetlands as Areas of Particular Concern, and will revise and update the boundaries using established methodologies, as well as building capacity for DCRM staff to conduct these updates through trainings for the methodologies. Similarly, DCRM also found that coastal hazards APCs will require a boundary update. Through collaboration with FEMA and other stakeholders in the FEMA Flood Insurance Rate Maps (FIRM) update, DCRM will engage in a data discovery, collection, and validation process to incorporate the data into adopting new coastal hazards APC boundaries.

Summary of Recent Section 309 Achievements

2011-2015 Section 309 Achievements

From 2016-2020, DCRM was able to finalize several program changes from strategies resulting from the 2011-2015 Section 309 Assessment & Strategy Report. These updates and program changes are discussed below.

Review and Guidance Regarding CRM Wetlands Policy

Enhancement Areas: Wetlands

DCRM adopted regulations and policies to define jurisdiction over all wetlands and more adequately define what constitutes a wetland area. Amended regulations and the adoption of the “mitigation hierarchy” give DCRM the authority to enforce a no net loss policy, buffer zone, and mitigation requirements. Also added to the DCRM regulations was a definition for the word “mitigation” and a sequential mitigation policy. This “mitigation hierarchy” is a decision-making process to use as guidance when considering permit requests, which can be found here: <https://dcrm.gov.mp/wp-content/uploads/crm/Mitigation-Hierarchy-Rule-2018.pdf>. This included a requirement to mitigate for all wetland functions, e.g. endangered species habitat, pollutant filtration, storage and conveyance of flood waters, and public recreation activities.

The following regulations and policies were adopted over the last five years to complete this Section 309 strategy:

- Proposed in January 2016, and adopted February 2016, DCRM adopted a “Rapid Assessment Methodology” (RAM) and “RAM User’s Manual” to establish uniform procedures necessary for DCRM to assess wetland conditions and monitor impacts on wetlands over time in order to support permitting and planning decisions. It can be found here: https://dcrm.gov.mp/wp-content/uploads/crm/CNMI-RAM_2015.pdf
- Proposed in September 2017 and adopted January 2018, DCRMs regulatory updates included a revised definition of “wetlands” and upgraded standards to support the “no net loss” policy and best management practices. The wetlands Areas of Particular Concern (APC) definition was modified to reflect the US Army Corps of Engineers (USACE) guidance with the exception of the “federal nexus” requirement. In addition, buffer zones that had been recommended in the 1990 DCRM “Saipan Comprehensive Wetlands Management Plan” were included in the mapping and guidance policy, supported by a 2017 literature review and policy assessment of buffer efficacy and best practices (see Wetland Buffers to Protect “Environmentally Sensitive Areas” and Ensure “No Net Loss”). In addition, DCRM adopted the contents of the Wetlands/Waters Delineation Report to ensure uniform delineation of wetland boundaries and to promote conservation and wise development of coastal resources. This program change adopted standards for determination of wetland boundaries using the USACE 1987 Delineation Manual and applicable 2012 Hawaii and Pacific Regional Supplement with the exception of the federal jurisdictional nexus analysis. These changes are intended to decrease or eliminate further development or in-fill in wetland APCs and support enhancing or maintaining habitat through the utilization of buffer areas as a management practice to improve wetland health and function as well as water quality. The report can be found here: https://dcrm.gov.mp/wp-content/uploads/crm/Wetland-Delineation-Report-Contents_Final.pdf.

- The 2018 Guidance on Using the Mitigation Hierarchy to Avoid Impacts of Projects and Activities was proposed on August 2018 and adopted on April 2019. The guidance serves as mitigation framework to address adverse impacts for projects within all of DCRM's APC and Major Siting permitting jurisdiction. In addition, this update requires DCRM to develop and publish policy guidance to support wise management of coastal resources. The Mitigation Hierarchy policy also provides guidelines to "offset" projects, should impacts to wetland systems or other high value ecosystems be unavoidable. However, the policy makes clear that avoidance and minimization should be implemented before mitigation is proposed.

Preliminary Exploration of Sea Level Rise and Associated Climate Change Impacts

Enhancement Areas: Coastal Hazards

As described in the previous Section 309 Assessment & Strategy Report, the 2011-2015 Coastal Hazards strategy resulted in the completion of a Vulnerability Assessment (VA) for Saipan (Greene and Skeele 2014) and Tinian and Rota (BECQ-DCRM 2015b). Based upon sea level rise models and vulnerabilities highlighted in these two VAs, DCRM updated its regulations in February 2018 to increase shoreline setbacks to reflect the best available data on increasing sea levels and storm surge extents. This update also included coordination and scoping requirements to support "early action" and assessment of "green infrastructure elements" for developments within a coastal APC or a FEMA designated AE/AO flood zone as noted in NMIAC §15-10-101(c).

Revision of the Saipan Lagoon Use Management Plan

Enhancement Areas: Cumulative and Secondary Impacts, Special Area Management Planning

In September 2017, DCRM's contractor (Horsley Witten Group) completed an update to the Saipan Lagoon Use Management Plan (SLUMP). The 2017 update built off of the 2016 Saipan Lagoon User Survey and Mapping project which aimed to better understand the predominant uses of the lagoon as well as the particular areas where each activity tends to occur. A comprehensive State of the Lagoon report was developed to compile scientific studies, technical reports, and maps pertaining to the quality of lagoon resources, potential climate change and watershed threats, coastal dynamics, use conflicts, and past management priorities. A public forum comprised of four separate sessions was also held to present data on the current conditions of the lagoon, solicit stakeholder input, and develop priority action areas and initial implementation options. This SLUMP update included twelve management recommendations:

1. Establish designated Lagoon use areas for motorized marine sports operations
2. Update DCRM marine sports permits
3. Minimize watershed impacts on corals, especially in the northern Lagoon
4. Develop and implement a unified Lagoon users' education plan
5. Collaborate with Commonwealth Utilities Corporation (CUC) on critical wastewater infrastructure improvements
6. Improve public access infrastructure for Lagoon users
7. Encourage sustainable use of Mañagaha resources
8. Create a fishing safety equipment program
9. Continue to support BECQ's marine monitoring program
10. Evaluate and implement appropriate shoreline stabilization and erosion control projects

11. Implement stormwater management improvements
12. Establish a sustainable, dedicated funding mechanism for Lagoon use management

As recommended in the final SLUMP update, DCRM intends to update its Jet Ski Rules and Regulations (NMIAC 15-20) using the usage maps produced during the stakeholder workshops. The SLUMP is being used to inform this program change as a designated use map will supplement the regulation update. DCRM is also focusing efforts on the fourth recommendation to develop and implement a unified Lagoon users' education plan. Partnering with Marianas Visitors Authority (MVA), Northern Marianas College (NMC), and other agencies, DCRM is working with the Marine Sports Operator community to ensure a stakeholder informed product is delivered out of this recommendation. Surveys within the MSO community are currently being conducted and the curriculum is under development. These processes will require a bit of time but will be completed within the 2021-2025 cycle. DCRM anticipates that the next SLUMP review and revision will occur in the 2026-2030 cycle.

2016-2020 Section 309 Achievements

DCRM's 2016-2020 Section 309 Assessment and Strategy involved two strategies:

1. *Promoting Better Building and Development Practices through DCRM Permit Incentives:* Addressing "Cumulative and Secondary Impacts," this strategy sought to reduce the impacts of stormwater runoff and non-point source pollution on the CNMI's shoreline and coastal waters through the development of an incentives program that would prioritize low-impact develop (LID) building practices.
2. *Coastal Hazards:* This strategy sought to create DCRM-specific coastal hazard mitigation and adaptation guidelines that incorporate the unique demographics of the CNMI and expanded upon the 2014 Saipan Vulnerability Assessment to include a broader range of hazards, including storm surge, localized flooding, and drought.

In this past cycle (2016-2020), some progress was made on both of these strategies.

Promoting Better Building and Development Practices through DCRM Permit Incentives

Permitting incentives were included in the 2018 DCRM regulations update to support low impact development, deployment of green infrastructure, and maintenance of living shorelines. These updates included permit fee reductions for major siting projects that are "LEED Certifiable" or that incorporate best practices for site redevelopment as follows in 15-10-205(h)(5)(1)&(2):

Tier 1 Reduction	Building design and construction are “LEED Certifiable”, scoring between 40-49 points on the LEED v4 Building Design and Construction Checklist	10% fee reduction
Tier 2 Reduction	Building design and construction are “LEED Silver Certifiable”, scoring between 50-59 points on the LEED v4 Building Design and Construction Checklist	15% fee reduction
Tier 3 Reduction	Building design and construction are “LEED Gold Certifiable”, scoring between 60-79 points on the LEED v4 Building Design and Construction Checklist	20% fee reduction
Tier 4 Reduction	Building design and construction are “LEED Platinum Certifiable”, scoring between 80-110 points on the LEED v4 Building Design and Construction Checklist	25% fee reduction

Tier 1 BMP Reduction	<ul style="list-style-type: none"> - Permittee or its operators implements and maintains on-site recycling and composting programs to reduce 50% or more of the waste stream; AND/OR - Project installs, utilizes, and maintains “Energy Star” rated high efficiency / LED lighting and appliances 	5% fee reduction
Tier 2 BMP Reduction	Applicant redevelops or rehabilitates 15% - 25% of the existing building	10% reduction
Tier 3 BMP Reduction	Applicant redevelops or rehabilitates 26% - 50% of the existing building	20% reduction
Tier 4 BMP Reduction	Applicant redevelops or rehabilitates 51% - 74% of the existing building	30% reduction
Tier 5 BMP Reduction	Applicant redevelops or rehabilitates over 75% of the existing building	50% reduction

DCRM contracted a firm to develop the “Low-Impact Development Best Management Practices” Manual, published in April 2018. This document includes best management practices based upon assessments of current construction sites and interviews with real estate stakeholders. Other guidance documents produced through non-309 CZM projects during the 2016-2020 cycle that will support this strategy include the “Sustainable CNMI,” a guide for more sustainable practices for the CNMI’s hotel industry (Horsley Witten Group 2018) and “Guidance Manual for Smart, Safe Growth in

the CNMI” (Nimbus Environmental 2018). The SSG Guidance is being applied through the Office of Management and Budget as well as the Hazard Mitigation program to support project scoping in CNMI. This guidance has also been endorsed by CNMI’s Planning and Development Advisory Council (PDAC) for inclusion in the Comprehensive Sustainable Development Plan which is expected to be published in 2020.

Coastal Hazards

The original Coastal Hazards strategy included three components:

- A social vulnerability analysis, which will include the development of a social vulnerability index and the conducting of a public survey to gather information about the CNMI community’s experiences with coastal hazards;
- An update to the sea level rise models conducted under the previous Section 309 strategy with newly available data, and, should additional resources be available, the possible development of a data needs and gaps analysis to identify and prioritize data needs that will help with coastal hazard mitigation; and
- The development of a coastal hazards guidance plan for DCRM.

Updates and progress on these components are as follows:

- DCRM de-scoped the social vulnerability assessment and instead, is incorporating the social vulnerability assessment completed in 2014 into the new Better Building Practices strategy.
- Sea level rise scenarios and coastal flooding scenarios for Saipan were completed in 2017. Six revised sea level extremes and flooding thresholds were created based on the 2017 updates to NOAA sea level trend analysis and the global and regional Sea Level Rise Scenarios for the United States. The resulting spatial data has been published into DCRM’s Open Data Portal, Climate & Hazards Viewer, and Public Permitting App, and has been incorporated into the SSG Guidance and review matrix for project scoping and prioritization purposes. Tinian and Rota sea level rise scenarios are currently in progress employing similar methodology and should be completed near the end of 2020. This data will be included in the Permitting App and the SSG matrix review resources when QA/QC has been completed.
- DCRM determined that it would not create a specific coastal hazards guidance plan, but rather would incorporate the coastal hazards data into the products resulting from Strategy 1 – “Better Buildings” (see below).

Revised 2016-2020 Section 309 Strategy

In March 2019 DCRM submitted a request to NOAA OCM to revise the 2016-2020 strategies for coastal hazards and cumulative and secondary impacts. These were re-scoped to incorporate the strategy’s key elements into a new single strategy for “Better Buildings Practices to Address Coastal Hazards” strategy. The revised work plan sought to address coastal hazards adaptation guidelines through the Better Buildings Program instead of developing a standalone Coastal Hazards Guidebook. As stated in the reprogramming request, hazard preparedness begins in the planning and siting of new projects. Options for increasing the resilience of new development to projected coastal hazards can be gathered and assessed just as potential techniques for low-impact development and enhanced stormwater management, the original focus of Strategy 1. The

appropriate practices can then be incentivized and incorporated into DCRM's regulations together, and a Better Buildings Guidebook created to address both facets simultaneously.

Building upon the progress to date, DCRM is currently on the fourth year of the strategy. DCRM staff is in the process of compiling and analyzing recommendations from the above-mentioned progress to develop a guidebook, and work with permitting section to incorporate a guidance and updated incentives program into the permitting process. The incentives will be translated into regulatory language and guide the updates into regulatory change as DCRM develops an accompanying guidebook through the fourth and fifth year for distribution to developers and other stakeholders. By the fifth year, the proposed regulation and guidebook will be presented for further recommendations from agencies, stakeholders, and the CRM Agency Board for their review and approval. The program intends to submit a formal program change for OCM's review and approval by the end of October 2021.

Assessment

Phase I (High-Level) Assessment

Wetlands

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

Note: For the purposes of the Wetlands Assessment, wetlands are “those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” [33 CFR 328.3(b)].

Resource Characterization

- Using provided reports from NOAA’s Land Cover Atlas, please indicate the extent, status, and trends of wetlands in the state’s coastal counties.

Current state of wetlands in 2016 (acres): 641.79 acres (according to 2016 C-CAP data); 717.8 acres cited in 2018 CNMI 305b and 303d, Water Quality Assessment Integrated Report (Yuknavage 2018) and Economic Valuation Study of CNMI Inland Wetlands (Wolfs Company 2019) which includes the northern island of Pagan.

Coastal Wetlands Status and Trends

Change in Wetlands	from 2005-2016 ¹
Percent net change in total wetlands (% gained or lost)	5.835% total gain: -0.0890% (loss in Saipan), 5.924% (gain in Tinian), N/A (Rota)
Percent net change in freshwater (palustrine wetlands) (% gained or lost)	5.750% total gain: -0.174% (loss in Saipan), 5.924% (gain in Tinian), 0% (change in Rota)
Percent net change in saltwater (estuarine) wetlands (% gained or lost)	No gain or loss of estuarine wetlands

It should be noted that while the available C-CAP data indicates a gain in wetlands on the island of Tinian, based upon DCRM’s work and familiarity with wetland conditions on Tinian, DCRM does not believe there was a substantial wetland gain on Tinian during this time period. The trends for wetlands on Tinian was based upon two C-CAP datasets: 2005 and

¹ C-CAP data only available from 2005 to 2016. Only two relevant C-CAP data points available for comparison, different years on different islands: Saipan (2005-2016), Tinian (2005-2016), and Rota (2005-2014). Error of percent net change in total wetlands is explained in text regarding wetlands in Tinian.

2016. Through ground-truthing these wetlands, DCRM believes that the 2016 data included the previously not identified Mahalang complex and improperly defined Bateha complex. Therefore, when including the C-CAP dataset processing and remote sensing product development for the island of Tinian, the result produced calculations of wetland gain from these wetlands. The Makpo wetlands complex also serves as a crucial aquifer system to the island. Increased water withdrawal from potential land conversions to agriculture would threaten the island's water supply (Wolfs Company 2019).

How Wetlands Are Changing

Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 2005-2016 (Square Miles) ²
Development	0.001545
Agriculture	0.000814
Barren Land	0.002877
Water	0.000224

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.

Based on ground-truthing and comparison with other datasets such as the US Fish and Wildlife Service (US FWS) National Wetlands Inventory (NWI), the C-CAP data may underestimate wetland loss. The C-CAP data captured 3.5-acre loss of wetlands on Saipan from 2005-2016. The 2019 Wetland Economic Valuation Study (EVS; Wolfs Company 2019) identified selected wetland areas threatened by invasive species, pollution and illegal waste, development, water withdrawal, and other threats (Wolfs Company 2019). Wetland loss is heavily influenced by development. Trends in development threaten the following wetland areas on Saipan: Tanapag, Lower Base wetland; Tanapag/As Mahettok wetland; Susupe wetland complex; Garapan/AMP wetlands; Chalan Lao Lao/Chalan Kiya wetland; and San/Roque/Puntan Achugao wetland (Wolfs Company 2019). According to the CNMI Department of Fish and Wildlife (DFW), Lake Susupe has lost two acres and Flores Pond has lost ~0.5 acres to development. Illegal dumping violations in wetland areas continue to be an on-going issue.

Actions to address wetland loss and pollution have been incremental in this cycle. The 2018 CNMI 305b and 303d Water Quality Assessment Integrated Report (Yuknavage 2018), the most recent to the 2014 report used in the previous cycle, stated that water quality monitoring now occurs for wetlands affected by proposed development that falls within the 50-ft buffer as required by DCRM. Ongoing efforts to delineate and assess wetland areas continue. However, Lake Susupe remains the only CNMI lake with multi-year water quality data available. Water quality of the lake has been degrading due to the steady increase of *E. coli* exceedances since monitoring began in 2010 along with the diminished DO% and high

² C-CAP data only available from 2005 to 2016. Only two relevant C-CAP data points available for comparison, different years on different islands: Saipan (2005-2016), Tinian (2005-2016), and Rota (2005-2014).

pH concentrations. Failing septic systems, sewer line overflows, and runoff from roadways persist as contributions to water quality degradation. The 2017 total maximum daily load (TMDL) has been approved for *E. coli* in Lake Susupe so only diminished DO% and high pH concentrations remain as impairment concerns on the 303(d) list. Analysis using recent visual field assessments, 2017 National Hydrography Dataset, and DCRM Wetland and Streams GIS data layers found that CNMI wetlands are degraded due to hydrological alterations from fill and introduction of invasive species. The 2017 TMDL Watershed Report indicates that exceedances in Lake Susupe were the highest in 2016, ranging from 5 to 25% with an average of 11%.

The Office of Planning and Development (OPD) conducted a review of the CNMI's wetlands in their Resources Report which contained excerpts from various sources. It is reported that wetlands are not regularly monitored for water quality unless there are proposed developments within the 50-ft buffer. Although they are not regularly monitored, natural and man-made wetlands do serve an important biological function as it has been reported that man-made water features, including golf course ponds, are an important wetland habitat for critical avifauna, specifically the Mariana Moorhen. Many of the moorhens on Saipan and all of the moorhens on Rota are found in human-made wetlands.

In 2018, the mitigation hierarchy was integrated into the DCRM permitting process and may have resulted in a decrease in wetland violations. During this reporting period, one wetland APC violation resulted in the construction of a rain garden at WSR Elementary School in Susupe to offset lost functions within the watershed. However, unpermitted wetland violations have shown to occur following permitted development activities. When these happen, permittee-responsible mitigation may occur. The "Mitigation Hierarchy" is a decision-making process used to anticipate and avoid impacts on biodiversity, ecosystem services and coastal resources. DCRM uses this process to regulate, minimize, rehabilitate, or offset impacts to these high-value ecosystems or "areas of particular concern". Please see the link for more information: <https://dcrm.gov.mp/wp-content/uploads/crm/Mitigation-Hierarchy-Rule-2018.pdf>.

The "Economic Valuation Study of CNMI Inland Wetlands" (Wolfs Company 2019) was conducted to provide comprehensive information on total economic valuation of wetland sites. This can improve the accuracy of cost-benefit analyses and precise comparisons between sites for mitigation and restoration. Future outcomes will be used by DCRM permitting to update compensatory mitigation options.

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.

House Bill 20-13, Public Law No. 20-91 was passed in February 2019 to designate and establish Lake Susupe and its surrounding wetland as “Susupe Lake Wildlife Park” for the purpose of and in accordance with this act. No outcomes of the act are visible yet, but by establishing a wildlife park the area will be utilized for future conservation programs aimed at protecting wildlife species and their habitats as managed by the Department of Land and Natural Resources, Division of Parks and Recreation.

In January 2016, DCRM adopted the “Rapid Assessment Method” (RAM) and “RAM User’s Manual” to establish uniform procedures necessary for DCRM to assess wetland conditions and monitor wetland impacts over time to support permitting and planning decision making. This tool was developed to support the efforts of the strategies listed in the 2016-2020 Section 309 A&S Report. Likely future outcomes include uniformed and streamlined assessment methodology; as well as improved mapping, permitting, and planning to meet management goals of achieving “no net loss” of wetlands and protecting their critical functions.

In September 2017, DCRM adopted new wetland buffers. This was a CZM driven change to support coastal rules and regulations of DCRM’s Wetlands APC by enhancing or maintaining habitat through the utilization of buffer areas as a management practice to improve wetland health and functions and water quality. Likely future outcomes might include better water quality, improvement of habitat, and decreased loss of wetland area.

In January 2018, DCRM adopted revised regulations that clarified the definition of “wetland” and upgraded standards to support a “no net loss” policy and best management practices. Buffer zones were included in the mapping, taken from the minimum buffer recommendations of the 1990 DCRM “Saipan Comprehensive Wetlands Management Plan.” In addition, the Mitigation Hierarchy Policy was adopted as described in the 2018 CNMI 305(b) and 303 (d) Water Quality Assessment Integrated Report (Yuknavage 2018). These changes are intended to decrease or eliminate further development or in-fill on wetland APCs. A stream rapid assessment and valuation methodology has been developed by BECQ to support baseline data collection and restoration prioritization for streams on Saipan and Rota, since streams are included under DCRM’s regulatory definition of wetlands.

Although they are not a CZM-drive change under regulation, but rather a tool, they are utilized by DCRM to assess streams as APC and for DEQ to fulfill requirements under the Clean Water Act.

Enhancement Area Prioritization

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

High X

Medium

Low

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

Wetlands continue to be a high priority enhancement area. DCRM implemented some updated wetlands management tools as a result of the 2011-2015 Section 309 strategy, but studies and reports conducted over the past five years continue to highlight wetland loss and increasing pressure from development. Stakeholders who completed the online survey administered by DCRM in support of this assessment ranked wetlands as the highest priority enhancement area based on both total count (10 out of 16 respondents included wetlands in their top three) and by weighted score. Survey methodology and responses are discussed further in Section 5 of this report.

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.

Resource Characterization

1. In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards.

General Level of Hazard Risk in the Coastal Zone

Type of Hazard	General Level of Risk ³ (H, M, L)
Flooding (riverine, stormwater)	M
Coastal storms (including storm surge)	H
Geological hazards (e.g., tsunamis, earthquakes)	M
Shoreline erosion	H
Sea level rise	H
Great Lakes level change	N/A
Land subsidence	L
Saltwater intrusion	H
Other (please specify)	N/A

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.

Completed since the last assessment:

- **2017 CNMI Catastrophic Typhoon Response Plan:** Annex to the FEMA Region IX All-Hazards Plan (FEMA 2017). Defines strategies for response to a catastrophic typhoon affecting CNMI including eight objectives focusing on logistics and planning to provide and restore power, water, fuel, shelter, medical care, marine transportation, commodities, and other essential resources.
- **CNMI Standard State Mitigation Plan Update (SSMP; CNMI HSEM 2018):** These updates include stakeholder input, integrated 2014-2018 mitigation plans and projects, hazard profiles and impacts, updated CNMI demographic and statistical data from errors in 2010 census data, recent upgrades to CNMI telecommunications and weather monitoring, data regarding groundwater wells and utilities capacity and infrastructure, data from Typhoon Soudelor and other severe weather events, and revised references.

³ 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*

- **BECQ 2017 SLR Map Layer Updates:** Methodology for Coastal Flood Geoprocessing (August 2017): Updates original sea level rise (SLR) mapping methodology appended to the Saipan Climate Change Vulnerability Assessment (Greene and Skeele 2014), summarizing local and regional sea level data used to develop coastal flooding scenarios for Saipan, CNMI, and outlining basic geospatial processing steps to derive spatial data for six of those scenarios.
- **Garapan Area Shoreline Assessment Study (USACE 2017):** USACE provided the Garapan Area Shoreline Assessment Study as guidance for addressing shoreline erosion. The study was conducted due to concerns about erosion and the need to protect coastal ecosystems, upland development, and infrastructure. This guidance may be used for encouraging green or hybrid stabilization methods over grey stabilization methods.
- **Shoreline Monitoring 2018 Data Report (BECQ-DCRM 2018):** Shoreline erosion is an on-going problem especially after high intensity storm events. DCRM Shoreline Monitoring was more robust under the 2016-2020 cycle. Data collection persists and improvements to understanding shoreline dynamics are underway. Likely future outcomes of the change are that the CNMI will be able to better predict and model outcomes for changing shoreline scenarios especially as storm events and climate hazards are increasing in intensity.
- **Low-Impact Development Best Management Practices: Past, Present, and Future (Hawaii Ohana Kit ADU & Home Building System 2018):** This document was a broad assessment of the most relevant low-impact development best management practices applicable in the CNMI. The report was based on the concept that the implementing and incentivizing of low-impact development BMPs is critical to safeguarding the CNMI's cultural and environmental resources.
- **Guidance Manual for Smart, Safe Growth (SSG) CNMI (Nimbus Environmental 2018):** The SSG Guidance Manual introduces SSG and discusses adaptation measures, recommendations for government action, planning resources, regulatory instruments, and tools to work towards SSG in the CNMI. This Guidance Manual presents key issues and tools to facilitate leadership and action towards SSG, including a review matrix which is being applied to project scoping and development. This Guidance Manual aims to help the CNMI Government evaluate planning and development initiatives for conformance with SSG Principles in a consistent and uniform manner. Information presented here can be worked into regular CNMI processes and policies such as updates to planning documents and regulations.
- **Sustainable CNMI (Horsley Witten Group 2018):** A Manual for Sustainable Design, Construction, and Operational Practices for the Hotel Sector. The report provides guidance on how the implementation of best management practices (BMPs) during hotel design, construction, and operation can contribute to long-term environmental, societal/cultural, and economic sustainability.
- **Saipan Shoreline Access and Shoreline Enhancement Assessment (Sea Engineering 2018):** A comprehensive survey of the condition of select beaches on the island of Saipan, Commonwealth of the Northern Mariana Islands. Sea Engineering assessed eighteen beaches along the coastline of Saipan to determine vulnerability to coastal erosion and identified site-specific shoreline enhancement opportunities.

Completed prior to the last assessment, but still relevant:

- **Climate Vulnerability Assessment for the Islands of Rota & Tinian, CNMI (BECQ-DCRM 2015b):** These assessments were included in the previous 309 assessment; however, they are still relevant because they continue to reference and inform hazards work, including many of the products listed above. Rota and Tinian will have to adopt an “adaptive management” form of planning to cope with threats from climate change. Whereas Rota will likely continue to respond to climate threats autonomously from local or federal government intervention, Tinian may have a chance to politically leverage development and DOD intervention in order to adapt. Both islands face high vulnerability to coastal erosion, storms and cyclones, and storm surges; and low vulnerability to increase in precipitation. In contrast to Rota’s fairly low susceptibility to drought, Tinian is highly vulnerable because of agriculture and lack of freshwater sources and distribution. Tinian’s ocean chemistry, including high ocean temperatures and ecosystem damage, is highly vulnerable especially if marine resource management is not coordinated with future land use and adaptation actions.
- **Climate Change Vulnerability Assessment for the Island of Saipan, CNMI (Greene and Skeele 2014):** This assessment was included in the previous 309 strategy; however, they are still relevant because they continue to reference and inform hazards work, including many of the products listed above. The west coastal plain, especially between Susupe and Tanapag, are at the highest vulnerability to sea level rise and rainfall shifts. The whole island will likely see future impacts from climate change, but Garapan and Lower Base areas should be prioritized for assessments and adaptation work. Coastal inundation, wetland flooding especially in low-lying areas, and precipitation-induced flooding will cause the greatest impacts.

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	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
Elimination of development/redevelopment in high-hazard areas, based on state definition	N ⁴	Y	N
Management of development/redevelopment in other hazard areas	Y	Y	Y
Climate change impacts, including sea level rise or Great Lakes level change	Y	Y	Y

Significant Changes in Hazards Planning Programs or Initiatives

Topic Addressed	Employed by State or Territory	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
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

Topic Addressed	Employed by State or Territory	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
Sea level rise or Great Lakes level change	Y	Y	Y
Other hazards	Y	Y	Y

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

NMIAC §15-10-345 defines “coastal high hazard area” as FEMA zones V and VE from the Flood Insurance Rate Maps (FIRMs), which were last updated in 1996. These areas shall be considered the Coastal Hazards APC. These parts of the coastal Special Flood Hazard Area are where waves and fast-moving water can cause extensive damage during the base flood event. The FEMA Flood Insurance Study (FIS) for CNMI calculates V & VE based on modeled storm data, 1% annual chance storm-driven still water levels, and 1% annual chance wave run-up levels “Zone VE” means that a detailed study has been done for the area, and base flood elevations (BFE) have been calculated. The label “Zone V” means that a detailed study has not been done for the area. BFE data is not available, but wave hazards

⁴ While the territory is not eliminating development in high-hazard areas based on definition, the CMP highly encourages eliminating it, and evaluates proposed projects to determine compatibility.

are still expected. Structures in areas mapped as Zone V and Zone VE are subject to stricter building requirements because of the higher risk of damage from strong waves.

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

Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law
 §15-10-345 Specific Criteria; Areas of Particular Concern; Coastal Hazards amended DCRM regulations to more strictly follow FEMA criteria for projects within coastal high hazard flood zones. This does not entirely eliminate development in these high hazard areas, but creates priority categories for usage and development in order to adapt to climate change impacts. The outcome of this regulation change is that there is more stringency and scrutiny that DCRM will place on evaluating proposed projects for applicants of the Coastal Hazards APC permit. Based on FEMA's flood zones and management standards, such as impact prevention and mitigation, project proponents will need to demonstrate consistency with the regulations prior to beginning the development process. These are CZM and 309-driven changes as spearheaded by DCRM.

Significant Changes in Hazards Planning Programs or Initiatives

The CNMI's Standard State Mitigation Plan (SSMP) was updated in August 2018. This plan provides an in-depth guide for State and local decision makers to reduce the potential impact of identified hazards. Approval of this plan results in Hazard Mitigation Grant Program funding from FEMA per 5-year hazard mitigation planning cycle. This update was completed by the Office of Homeland Security and Emergency Management Services (HSEM) and was not CZM-driven. However, DCRM contributed to the development of the most recent SSMP update by developing the section addressing climate change and sea level rise. This section was informed by the Saipan Vulnerability Assessment, which was a project driven by the 2011-2015 Section 309 cycle.

Significant Changes in Hazards Mapping or Modeling Programs or Initiatives

DCRM improved mapping capabilities with new spatial data layers reflecting increased future sea levels due to climate change-driven processes and seasonal extremes and produced the BECQ 2017 SLR Map Layer Updates: Methodology for Coastal Flood Geoprocessing. This project provides more accurate data to improve inundation and flood plain management in Saipan and was a CZM driven change.

Enhancement Area Prioritization

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

High X

Medium

Low

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

The CNMI continues to be vulnerable to coastal hazards, and the community and resource managers need to continue to adjust in order to adequately adapt to projected vulnerabilities and changes. Within a span of five years, the CNMI received significant damage to infrastructure, economy, and tourism with the direct hits of Typhoon Soudelor on Saipan (2015), Typhoon Mangkhut on Rota (2018), and Super Typhoon Yutu on Tinian and Saipan (2018). Noticing the climate patterns, residents are concerned that powerful typhoons may become the norm. Stakeholders who completed the online survey administered by DCRM in support of this assessment ranked coastal hazards as the second highest priority enhancement area based on both total count (9 of 16 respondents included hazards in their top three) and by weighted score. For example, one stakeholder described damage from Typhoon Yutu to Tachogna Beach, a sandy beach on Tinian, and the potential for storm surges caused by typhoons to erode the shoreline and threaten infrastructure and property. An interview with a local based stakeholder from NOAA was conducted to identify changes that have happened since the previous five-year cycle. They have called for better hazard preparedness through interagency collaboration and funding, and preventing further development too close to the shoreline.

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)

Resource Characterization

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

Public Access Status and Trends

Type of Access	Current number	Changes or Trends Since Last Assessment (↑, ↓, -, unknown)	Cite data source
Beach access sites	40 official (28 on Saipan, 6 on Tinian, 6 on Rota) 34 unofficial (11 on Saipan, 2 on Tinian, 15 on Rota; 4 on Pagan; 2 on Anatahan)	-	2015 Shoreline Access Survey results (BECQ Story Map App can be found here: https://www.arcgis.com/apps/MapSeries/index.html?appid=ea1006020b84410885aedbc15f92de39 2015 Shoreline Access Guide can be found here: https://dcrm.gov.mp/wp-content/uploads/crm/ShorelineAccessGuide2015.pdf#page=10
Shoreline (other than beach) access sites	13 official (3 on Saipan; 4 on Tinian; 6 on Rota) 11 unofficial (5 on Saipan, 2 on Tinian, 4 on Rota)	-	2015 Shoreline Access Survey results (BECQ Story Map App, Shoreline Access Guide)
Recreational boat (power or non-motorized) access sites	8 official (5 on Saipan, 1 on Tinian, 2 on Rota) 1 unofficial, but no infrastructure (Saipan)	-	2015 Shoreline Access Survey results (BECQ Story Map App, Shoreline Access Guide)
Number of designated scenic vistas or overlook points	4 official (2 on Saipan, 1 on Tinian, 1 on Rota) 3 unofficial (1 on Saipan, 2 on Rota)	-	2015 Shoreline Access Survey results (BECQ Story Map App, Shoreline Access Guide)
Number of fishing access points (i.e. piers, jetties)	61 official (36 on Saipan, 11 on Tinian, 14 on Rota) 46 unofficial (17 on Saipan, 4 on Tinian, 19 on Rota, 4 on Pagan; 2 on Anatahan) ⁵	-	2015 Shoreline Access Survey results (BECQ Story Map App, Shoreline Access Guide)

⁵ All of the beach access, shoreline (other than beach) access, and recreational boat access points were added to capture the scope of fishing activity that is occurring in the CNMI. It is important to note that various forms of fishing using different types of gear is one of the primary uses that the public has for public access points. Most of the fishing that occurs are a combination of subsistence/ traditional, and recreational.

Coastal trails/ boardwalks	2 official coastal trails (1 on Saipan, 1 on Tinian) 3.25 miles of coastal trail (2.5 on Saipan, .75 on Tinian)	-	2015 Shoreline Access Survey results (BECQ Story Map App, Shoreline Access Guide)
Number of acres parkland/open space	33 total coastal parks, conservation areas, or cultural spaces totaling 824.42 total acres across Saipan, Tinian, and Rota (does not include Northern Islands)	-	2015 Shoreline Access Survey results (BECQ Story Map App, Shoreline Access Guide)
Access sites that are Americans with Disabilities Act (ADA) compliant	6 (at Saipan beaches) No data at other public access points ⁶	-	Saipan Shoreline Access and Shoreline Enhancement Assessment (Sea Engineering 2018)
Other unofficial boat landing sites	5 unofficial boat landing sites (1 on Aguijan, 1 on Maug, 1 on Agrihan; 2 on Alamagan)	-	2015 Shoreline Access Survey results (BECQ Story Map App, Shoreline Access Guide)

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties.

High demand for shoreline public access in the CNMI persists due to the reliance on the shoreline by residents for recreational activities, subsistence fishing, and commercial activities, and the high volume of tourists that visit the CNMI each year. Coastal public access structures remain in need of improvement and repair especially after the events of Typhoon Soudelor (2015), Typhoon Mangkhut (2018), and Super Typhoon Yutu (2018). According to the Marianas Visitor's Authority (MVA) Sustainability Plan (Horwath HTL 2017), visitor arrivals are projected to increase from 2017 to 2026 in response to the notable boost of Chinese and Korean visitors. However, the more recent MVA Citizen Centric Report (2019) states that this fiscal year saw a "30% decrease in visitors compared to FY 2018." This decline resulted from the indirect and direct impacts of Typhoon Yutu on Saipan infrastructure and government as well as other Asian political influences, and may continue due to the uncertain effect of the ongoing global COVID-19 pandemic on Asian and international tourism. The introduction of the Japan based low-cost Skymark Airlines could

⁶ Data on ADA compliance at outdoor recreation areas, including shoreline public access points on Saipan, Tinian, and Rota, was collected during 2019 surveys for the CNMI Statewide Comprehensive Outdoor Recreation Plan (SCORP), expected completion date December 2020. This number can be updated once this data is publicly available.

potentially cause a resurgence in tourism from Japan and could add pressure into improved infrastructure within public access areas.

Due to significant economic events, the CNMI's population has experienced episodes of growth and decline. The exodus of the garment industry in the CNMI decreased the population from 62,392 to 48,220 by 2010 (US Census 2010). However, the introduction of the casino industry and Chinese waiver visa program in 2015 has likely caused the population to grow in the subsequent years. The CNMI Household Income and Expenditures Survey (HIES) report (DOC 2017), which projects the population of Saipan based on historical data and population trends, created three potential population scenarios by 2028: (1) the high growth scenario, based on strong visitor arrivals projected by MVA in 2018; (2) the medium growth scenario, considering sustainable visitor arrivals; and (3) the low growth scenario, considering the phase-out of CW-1 visa workers and steep decline of tourist arrivals followed by slight recovery. Based on these projections, the CNMI may have a population range of 45,066 to 79,698 by 2028.

The Marianas Visitor's Authority commissioned a feasibility and sustainability study of tourism development in the CNMI. This report, published in January 2017 by Horwath HTL, assumes that total visitor arrivals in the CNMI would reach about 1.2 million. At this predicted growth rate, the number of visitors to the CNMI would double what was achieved during the peak years (1996-1997). Assuming this upward trend is correct, the stressors on public access would be tremendous and practically impossible to manage effectively (Horwath HTL 2017).

However, with the on-going COVID-19 pandemic, the CNMI economy has been drastically impacted, with only one airline carrier (United) coming in and out of the Saipan at a more than 50% reduced schedule. Hotels have low occupancy and tourism is at the lowest peak as government precautionary measures to prevent spread are implemented. The current situation brings great uncertainty of population change after the pandemic subsides especially with the economic damage from loss revenue.

The local demand for shoreline public access remains consistent with the demand five years ago, documented in the previous Section 309 report. On all three populated southern islands (Saipan, Tinian, and Rota), public access demand by residents is primarily driven by recreation and subsistence fishing. Additional data regarding the amenities, ADA compliance, and accessibility of public access sites was collected during surveys conducted in 2019 for the CNMI Statewide Comprehensive Outdoor Recreation Plan (SCORP), which has an expected completion date of December 2020.

Saipan

There are many public access sites on Saipan, most of which can be found within public parks or conservation areas. These sites are used by both visitors and residents alike despite the fact that most of the amenities located at the sites are in a state of disrepair. Several key shoreline access points around the island are used for subsistence fishing, either for boating access or shore-based fishing of talaya (cast-net), spearfishing, or cliff fishing (PCR 2017b). However, with the projected completion of the CNMI's first SCORP, there will be opportunities to enhance these sites based on the public access needs of the community. This document will serve as a resource for infrastructure located on public lands which are in need of repair. Most public access amenities on the southern end of Saipan and

Laolao Bay were severely impacted by Super Typhoon Yutu. Super Typhoon Yutu also greatly impaired the Outer Cove Marina, Saipan's only commercial and recreational marina. Outer Cove Marina was subsequently closed in September 2019 due to these damages. Outer Cove Marina serves a crucial role in boat access for tourism and recreational use. The National Park Service is currently working on repairing damages to parts of the Smiling Cove Marina, including Outer Cove, using Park Service Disaster Funding.

Tinian

On Tinian, the demand for shoreline public access is primarily from residents, and tourists making day trips from Saipan. Residents frequent the southern beaches for recreation, and many of the undeveloped shoreline access points are used for subsistence fishing access (PCRP 2017b). Visitor pressures coupled with the military build-up creates quite a complex scenario in terms of public access. There are number of proposed military activities which will have an effect on the coastal resources of Tinian and the rest of the CNMI. Most of the shoreline access sites on Tinian are located within the military-leased lands which may be problematic in the near future as the proposed activities could significantly impact the quality of the resources. To add to that, some of these sites may have to be reassessed to determine the extent of damage as a result of Super Typhoon Yutu.

Rota

On Rota, there are multiple access points along the main road from Sinapalo to Songsong some of which lie adjacent to private properties. Much of the demands and pressures experienced on Rota are unchanged from the last cycle, with local demand for shoreline public access being primarily recreational and subsistence fishing. While there are fewer development pressures, there have been numerous plans and discussions on the outlook of Rota. In order to effectively manage threats to this resource, it would be diligent to have the coastal program actively engage with the leadership in Rota at early stages of dialogue.

Northern Islands

Since most of the islands in the north are uninhabited, there is relatively little demand for coastal public access. There is a small number of people that live on Pagan and Agrihan for part of the year, and fisher folks make their way up to fish. As recent as 2019, there have been efforts to resettle Pagan and the Department of Public Lands has begun accepting applications for agricultural homestead lots to eligible applicants. Farallon De Medinilla (FDM) is currently under lease by the US Military for use as a bombing and training exercise range and public access in the area is restricted up to three nautical miles from the shoreline. The three northernmost islands of Farallon de Pajaros or Uracus, Maug, and Asuncion are located within the Marianas Trench Marine National Monument, and access to these areas requires a federal permit under Code of Federal Regulations, Title 50, Part 665, Subpart G for non-commercial or recreational fisher residents of CNMI and Guam. The CNMI may be expanding tourism out to the northern islands, and the proposed military build-up and live-fire activities present threats to the coastal zone which will also hinder access to residents of the CNMI.

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.

The Public Shoreline Access Guide for Saipan, Tinian and Rota was updated in 2015 (BECQ-DCRM 2015a) to provide the public with information regarding the recreational

opportunities available at various access points. During the development of this guide, DCRM also produced a comprehensive shoreline access dataset that includes all official and unofficial public access points on Saipan, Tinian, and Rota as of 2015.

The Saipan Shoreline Access and Shoreline Enhancement Assessment (SASEA; Sea Engineering 2018) was completed in 2018 and highlights and assesses underlying issues for eighteen beaches within the Saipan coastline.

The CNMI Statewide Comprehensive Outdoor Recreation Plan (SCORP) (Horsley Witten Group, in production) is currently under development, with the expected completion date of December 2020. This document will contain a comprehensive analysis of outdoor recreational areas and shoreline access points on Saipan, Tinian, and Rota.

A recent study funded by the Western Pacific Regional Fishery Management Council (PCRFP 2017b) provided an assessment of fishing and shoreline public access, on Saipan, Tinian, and Rota. This participatory workshop was based almost entirely on stakeholder feedback, and includes a breakdown of the most popular locations for fishing access based upon preferred species and fishing method. This report also includes a summary of concerns and pressures that the fishing community view as potential threats to fishing access.

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.

Significant Changes in Public Access Management

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

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

There have been no significant public access management changes in the CNMI; however, management changes can be expected with the future implementation of plans currently under development (e.g. SCORP), as well as DCRM's future efforts under CZMA Section 306 public access planning tasks.

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?

Publicly Available Access Guide

Public Access Guide	Printed	Online	Mobile App
State or territory has?	Y	Y	N
Web address	https://dcrm.gov.mp/wp-content/uploads/crm/FINALShorelineAccessGuide2015.pdf	https://dcrm.gov.mp/wp-content/uploads/crm/FINALShorelineAccessGuide2015.pdf https://dcrm.gov.mp/mapping/public-shoreline-access-story-map/	NA
Date of last update	September 2015	September 2015	N
Frequency of update	Recommended every 5 years. Previous update was in 1997.	Will accompany printed update.	Will accompany printed update

Enhancement Area Prioritization

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

High _____

Medium X

Low _____

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

Public access is a medium priority enhancement area due to the ease of public access for most recreational areas on the islands. Inadequate or broken amenities such as pala-palas (pavilions) and bathroom facilities remain an issue in the CNMI for many beaches and recreational areas. Existing infrastructure has been damaged by typhoons, or has not been maintained. Stakeholders, especially beach users, expressed frustration that they are in need of repair. The Outer Cove Marina is an important dock crucial to public access for tourists and residents going to Mañagaha Island. The CNMI SCORP that is currently underway, led by the Office of the Governor and Office of Grants Management & State Clearinghouse, will inventory outdoor recreation areas including shoreline access areas, and could help the CNMI secure funding to enhance shoreline public access infrastructure. The repair of the Outer Cover Marina is currently being addressed by the National Park Service, who received funding from a grant. Many stakeholders have expressed the desire for better outreach at shoreline access areas about protecting ocean life and enhancing recreational sites through implementing more environmentally-friendly amenities. Access to the shoreline continues to be open freely to the public, and on-going efforts from these entities to address public access needs are also weighed on the ranking of this priority.

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)

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.

Existing Status and Trends of Marine Debris in Coastal Zone

Source of Marine Debris	Significance of Source	Type of Impact	Change Since Last Assessment
Beach/shore litter	H	Aesthetic, resource damage, user conflict	-
Land-based dumping	H	Aesthetic, resource damage, user conflict, public health risk	-
Storm drains and runoff	H	Resource damage, water quality impairment, public health risk	-
Land-based fishing (e.g., fishing line, gear)	Unknown	Resource damage	Unknown
Ocean/Great Lakes-based fishing (e.g., derelict fishing gear)	Unknown	Resource damage	Unknown
Derelict vessels	M	Aesthetic, resource damage	-
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	Unknown	Resource damage	Unknown
Hurricane/Storm	H	Aesthetic, resource damage	↑
Tsunami	L	Resource damage	-
Other: Unexploded Ordnance (UXO)	H	aesthetic, resource damage, user conflicts	- ⁷

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.

⁷ Current UXO debris in the three main southern islands of Saipan, Tinian, and Rota is primarily debris from World War II, so trend remains neutral. However, live fire training has been ongoing at the northern island of FDM since at least 1971 and the 2020 Mariana Islands Training and Testing proposal resulted in increasing use of live munitions at this island. DCRM is concerned that with the proposed buildup of military training activity in the CNMI, the prevalence of UXOs and other marine debris related to military activities may increase.

There are relatively few datasets and reports focused specifically on marine debris, however, there have been significant efforts over the past five years by both DCRM and its non-profit partners to address marine debris. Through DCRM, The International Coastal Cleanup has been coordinated every year as a Public Outreach component in CZM cooperative agreements. The 2019 ICC received 1,617 volunteers who picked up a total of 9,427 pounds of trash in 76 beach locations. Community involvement has shown an increase with the higher amounts of volunteers and trash collected compared to the previous year.

In addition, significant efforts to address litter was undertaken by DCRM and stakeholders. The CNMI Litter Control Act was amended in 2016 to improve enforcement and collection of fines by creating realistic penalties such as enforceable minimum fines combined with community service, and stricter penalties in more sensitive conservation areas. Monthly beach clean-ups by MVA and BECQ as well as other private sector groups have been occurring as a community effort in tackling waste streams. From June 2015-2017, MINA received funding from NOAA Marine Debris Program's Community Based Marine Debris Removal Grant to increase capacity building through trainings, volunteers, and curriculum development. It also funded installation of mixed-waste and recycling bins at seven new locations, and organized volunteers to monitor and collect trash.

In 2019 MINA's School for Environmental Conservation program focused on Marine Debris resulting in tagged storm drains within Paseo de Marianas in Garapan. MVA, BECQ and other private sector groups continue to lead monthly beach clean ups. Illegal dumping violations in beaches, coastal jungles, and wetlands continue to be reported, likely due to the increase and enforcement of tipping fees at the landfill and transfer station.

Derelict vessels and storm-related marine debris

Derelict vessels and storm-related marine debris have been a significant issue for the CNMI over the past five years due to the increase in extreme weather events, notably the direct passage of Typhoon Soudelor (2015), Typhoon Mangkhut (2018), and Super Typhoon Yutu (2018) over the CNMI.

The "Habitat Equivalency Analysis and Project Evaluation – Paul Russ and Lady Carolina" (Johnston et al. 2015) was developed by a team of DCRM marine biologists and other technical staff in collaboration with NOAA and private consultants in response to the groundings of the shipping vessel *M/V Paul Russ* – which grounded while entering the Port of Saipan in September 2014; and the derelict fishing vessel *F/V Lady Carolina*, which grounded after breaking from its mooring during Typhoon Soudelor in August 2015. This report found that approximately 560 square meters of patch reef habitat were damaged. Due to its vulnerability to powerful winds from all directions, the *Lady Carolina* has the potential to destroy 1,6800 square meters of reef in the next two decades. The *Paul Russ* was removed by the responsible party two days after it grounded. The *Lady Carolina* remains on the reef almost five years after its initial grounding. However, the local environmental non-profit Pacific Coastal Research & Planning (PCRP) has been awarded two separate grants totaling \$1.8 million to fund the removal of the vessel, scheduled to happen in late 2020.

In October 2018, Super Typhoon Yutu made a direct pass over Saipan and Tinian with maximum sustained winds of about 180 mph and gusts of almost 200 mph. Yutu is now recorded as being one of the strongest storms to ever make landfall in the United States. Yutu caused considerable marine debris to end up in the ocean. The Yutu Reef Damage

Reporting app was created and utilized for the public to add data points for areas of the lagoon and reef where they saw damage from debris. Local agencies such as BECQ and the Mayor's Office of Saipan (MOS) worked to remove as much of the debris as possible, but much remained. In 2020, the local environmental non-profit MINA was awarded an emergency marine debris removal grant to fund the removal of significant land-based household and construction debris resulting from Yutu off of the southern coast of Tinian.

During Yutu, another vessel, the luxury motor yacht the *Grand Mariana I*, lost its mooring in the Port of Saipan and grounded approximately 170 m off the northern beach of American Memorial Park. The responsible party worked closely with federal and local agencies and the vessel was removed in July 2019.

Unexploded Ordnance (UXO)

While data continues to be limited regarding the extent of UXO in the CNMI, Department of Defense live-fire activities continue on FDM and at sea, contributing to additional expended materials and UXO. The US Navy issued a Record of Decision for the Marianas Island Testing and Training Range which states the amount of bombing activities will increase on FDM. The Navy has proposed and is moving forward with conducting a Munitions Response Site (MRS) removal action of a previous military training range on Chiget Beach, Tinian.

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.

Significant Changes in Marine Debris Management

Management Category	Employed by State/Territory	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
Marine debris statutes, regulations, policies, or case law interpreting these	N	N	N
Marine debris removal 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 and likely future outcomes of the changes.

Solid waste management continues to be an environmental challenge in the CNMI. The CNMI Department of Public Works (DPW) Solid Waste Division is working to address solid waste management issues on Saipan and improve waste facilities on Tinian and Rota. They are currently planning two new Transfer Stations – one in Kagman and one in As Gonno – for the underserved communities of the eastern and southern villages of Saipan. These transfer stations are initiated by the Public Law 19-52 to reduce illegal dumping and improper

disposal of hazardous waste. In 2019 following Super Typhoon Yutu, the U.S. Congress allocated disaster funding to support environmentally compliant waste management throughout the CNMI. This project is currently underway and is being facilitated by the Office of Planning and Development in partnership with DPW and BECQ-DEQ.

To support the efforts of BECQ's Litter Control program, DCRM placed waste receptacles to collect waste at select beaches on the eastern coastline of Saipan in 2018. This was done in an effort to reduce the frequency of illegal dumping. Bins are located at Coral Ocean Point, Hidden Beach, Tank Beach, Forbidden Island, and Ladder Beach. This program is currently funded by CZM to include trash pick-up services at these remote beaches. As funding for this will soon expire, DCRM is working to find legislature representatives to adopt these bins and continue the program.

Plastic Free Marianas Campaign, a DCRM-led and CZM-funded program, launched in January 2020 to bring awareness to plastic pollution, waste free initiative, and create partnership with the private and public sector in order "To ban the importation, production, distribution and use of single-use plastic bags in the Commonwealth; and for other purposes." None of these efforts were 309 driven and marine debris was not a high priority focus in the last 309 cycle.

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.

Through the stakeholder survey, environmental and tourism agencies have expressed concern for marine debris affecting ocean life, beach use, and tourism appeal. After Typhoon Yutu, the assessment team reported copious amounts of tin, lumber, plastic, trash, and metal objects at the shoreline and lagoon originating from nearby construction sites. They were unable to remove all of the debris due to their sheer weight and depth at where they were located in the lagoon. Stakeholders also supported continued clean-up efforts, legislation restricting or banning single plastic use, as well as public education for marine debris and increased assessment and accountability efforts throughout the CNMI's exclusive economic zone. DCRM will continue to combat marine debris through avenues outside of the scope of the 309 program.

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)

Resource Characterization

1. Please indicate the change in population and housing units in the state's coastal counties between 2012 and 2017.

Trends in Coastal Population and Housing Units

	2012 <i>*includes data from various sources and time frames</i>	2017 <i>*includes data from various sources and time frames</i>	Percent Change (2012-2017) <i>*includes data from various sources and time frames</i>
Number of people	2010 U.S. Census, CNMI Data: 53,883 2013 Pacific Community data estimate: 55,600 2012 World Bank mid-year data estimate: 53,718	No updated U.S. Census data since 2010 2018 Pacific Community mid-year data estimate: 56,200 2017 World Bank mid-year data estimate: 55,144	Percent change of Pacific Community data estimate 2013-2018: 1.08% Percent change of World Bank data estimate 2013-2018: 2.65%
Number of housing units	2010 U.S. Census, CNMI Data: 20,850	No updated U.S. Census data since 2010	N/A

2. Using provided reports from NOAA's Land Cover Atlas, please indicate the status and trends for various land uses in the state's coastal counties between 1996 and 2016.

Distribution of Land Cover Types in Coastal Counties

Land Cover Type	Land Area Coverage in 2016 (Acres)	Gain/Loss Since 2005 ⁸ (Acres)
Developed, High Intensity	N/A	N/A -
Developed, Low Intensity	N/A -	N/A -
Developed, Open Space	4588.47	GAIN: 685.36 LOSS: 530.48 NET: 145.88
Grassland	9982.79	GAIN: 789.49 LOSS: 1364.23 NET: -574.74
Scrub/Shrub	6938.36	GAIN: 701.20 LOSS: 474.61 NET: 226.59
Barren Land	4480.0	GAIN: 242.20 LOSS: 483.98 NET: -241.78
Open Water	3960.28	GAIN: 7.64 LOSS: 18.18 NET: -10.53
Agriculture	2568.39	GAIN: 607.76 LOSS: 606.1 NET: 1.74
Forested	50701.1	GAIN: 1050.94 LOSS: 1082.72 NET: -31.777
Woody Wetland	292.08	GAIN: 2.70 LOSS: 2.52 NET: 0.18
Emergent Wetland	369.06	GAIN: 4.29 LOSS: 1.00 NET: 3.20

3. Using provided reports from NOAA's Land Cover Atlas, please indicate the status and trends for developed areas in the state's coastal counties between 1996 and 2016 in the two tables below.

Development Status and Trends for Coastal Counties

	2005 ⁹	2016	Percent Net Change
Percent land area developed	17.00%	17.49%	+0.49%
Percent impervious surface area	16.06%	16.38%	+0.32%

⁸ C-CAP data only available from 2005 to 2016. Only two relevant C-CAP data points available for comparison, different years on different islands: Saipan (2005-2016), Tinian (2005-2016), and Rota (2005-2014), and Pagan (2005).

⁹ C-CAP data only available from 2005 to 2016. Only two relevant C-CAP data points available for comparison, different years on different islands: Saipan (2005-2016), Tinian (2005-2016), and Rota (2005-2014), and Pagan (2005).

How Land Use Is Changing in Coastal Counties

Land Cover Type	Areas Lost to Development Between 2005 ¹⁰ -2016 (Acres)
Barren Land	35.79
Emergent Wetland	0.23
Woody Wetland	0
Open Water	3.85
Agriculture	162.23
Scrub/Shrub	114.26
Grassland	132.53
Forested	308.43

* 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.

- 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.

Expansion of commercial development on the shoreline has increased since the 2016-2020 assessment. Notable docks experienced degradation during this cycle. Due to inadequate engineering and modifications of the structure, the southern tip of the Sugar Dock pier was abrading while the northern shoreline parallel to the dock is accreting, heavily reducing access for boats. Plans are in development for the re-engineering of the dock, which is considered a historic structure.

The Outer Cove Marina, an important docking area for commercial and recreational boating activities, was damaged and impaired by Typhoon Soudelor and Super Typhoon Yutu. DLNR plans to make repairs to the dock through FEMA funding, and NPS is also concurrently addressing areas for improvement within the park property.

The conversion of the Puerto Rico landfill into the Eloy S. Inos Peace Park was completed in 2017. This park is built with a revetment structure on three sides facing the Tanapag Lagoon. The permit requirements included coral and mangrove replanting and monitoring conditions

In addressing the development of future shoreline structures, revised 2018 DCRM regulations require site-specific shoreline analysis for proposed hard shoreline stabilization measures while encouraging and prioritizing soft or living shoreline stabilization measures. The interest of hardening the shoreline by businesses and residents alike are expected in the future, as beaches are perceived to be eroding away. The six-mile stretch of shoreline between the commercial districts of Garapan and Susupe is of particular concern. This shoreline closely abuts Beach Road and the Beach Road Pathway, as well as significant

¹⁰ Saipan (2005-2016), Tinian (2005-2016), and Rota (2005-2014) are accounted in these calculations.

community infrastructure and businesses. Although this shoreline experiences minimal wave action under normal circumstances, the storm surge resulting from the recent slew of extreme storm events have resulted in increased erosion and exposure of the infrastructure to damage.

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.

The CNMI 305(b) and 303(d), Water Quality Assessment Integrated Report Water Quality (Yuknavage 2018) report is based on data provided by various government and non-government agencies, and water quality data collected from September 2015 through October 2017. The report found that 58% of shorelines were found to be fully supporting all the designated uses set forth in the Clean Water Act, and the remainder were unsupportive of at least one Designated Use (DU), or lacked sufficient information to assess their attainment. Additionally, DEQ's TMDL Report Cards provides water quality trends for watersheds in the CNMI. The TMDL report cards highlight watershed specific trends, but impairments due to development and land-based pollution are a common challenge effecting coastal water quality.

The updated SLUMP (Horsley Witten Group 2017) and appendices contains several detailed data sets and reports that address cumulative and secondary impacts of coastal growth and development within the Saipan Lagoon.

The Garapan Area Shoreline Assessment Study (USACE 2017) and the Saipan Shoreline Access and Shoreline Enhancement Assessment (Sea Engineering 2018) are two reports focused on the stability of Saipan's shorelines and the vulnerabilities of nearby coastal development. Both recommend some degree of shoreline modification along certain stretches of shoreline with high value infrastructure nearby.

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	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
Statutes, regulations, policies, or case law interpreting these	Y	Y	Y
Guidance documents	Y	Y	Y
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.

Previously, in the evaluation of CRM Permit applications, the DCRM Director and CRM Agency Officials would assess the “cumulative impact” of proposed projects to consider the impact of existing uses and activities on coastal resources and determine whether the added direct and secondary impacts of the proposed project seeking a CRM permit will result in a significant degradation of the coastal resources. With 2018 revisions, the regulations now include considerations of climate impacts, where projects should consider the ability to accommodate future climatic change where relevant information is available. All major siting permit applications must include assessment of direct, indirect, and cumulative environmental and socio-economic impacts (15-10-206(e)(5)) which are broadly defined based on CEQ guidance regarding impacts of past, present, and reasonably foreseeable future actions in 15-10-020(x). The DCRM Director and CRM Agency Board consider cumulative effects when assessing significance of impacts (15-10-305). Where applicable, cumulative impact analysis should also consider, and minimize potential negative impacts to cultural resources and aesthetic enjoyment of coastal resources. Development proposals shall incorporate measures to avoid or minimize adverse impacts of the project. These measures shall be implemented at the applicant’s expense, and may include actions that minimize or avoid adverse impacts by limiting the magnitude or degree or the action or mitigation to restore the ecosystem functions or values of the affected environment.” (CNMI Administrative Code 2018, 15-10-305(a)).

This was a CZM driven change resulting from a Section 309 project. Outcomes include stricter permitting conditions for applicants and in turn an extra layer of protection of coastal resources through the permitting process. These permitting conditions create more responsibility for the applicant to include considering future climatic change, cumulative impacts, and impacts to cultural resources; as well as incorporating measures to minimize and avoid these impacts. For more information about significant changes to Special Area Management Plans, please see the “Special Area Management Plans” Phase I Assessment below.

Enhancement Area Prioritization

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

High	<input type="checkbox"/>
Medium	<input checked="" type="checkbox"/>
Low	<input type="checkbox"/>
2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

In the previous cycle, Cumulative and Secondary Impacts was a high level of priority for the CNMI. The strategy that it originally led to was re-scoped under Coastal Hazards. In this cycle through stakeholder engagement surveys in the distribution of votes, Cumulative and Secondary Impacts received the average number of votes and was also the median count over all the priority enhancement areas. Stakeholders selected this enhancement area in tandem with other enhancement areas such as Wetlands or Public Access, suggesting a connection to impacts in these specific areas due to development or tourism. Based on stakeholder feedback, Cumulative and Secondary Impacts can be difficult to analyze and anticipate, and attention is given to mitigating rather than preventing or avoiding these impacts. In contrast to coastal hazards, where the depth of the impacts cannot be clearly or fully analyzed until after the event, impacts from development or tourism can be prevented. For this particular enhancement area, many of the concerns were from stakeholders who work, or previously worked, in a regulating agency and understood the challenges of effective regulation where economic growth is involved in the CNMI. DCRM has made significant changes to this area since the last assessment, and additionally will continue to implement the Mitigation Hierarchy to Avoid Impacts of Projects and Activities in order to effectively mitigate, or avoid impacts before they occur.

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.”

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
Bird Island/Grotto	The management plan for Bird Island needs to be updated by appropriate agency since the last plan was in 2007. High numbers of users degrade resources. DCRM’s Sustainable Sites project may aid in development of a SAMP focused on user capacity. Ocean-based marine debris is an issue in the nearby Bird Island and can be addressed in updates to DFW’s Grotto-Bird Island Marine Protected Area Management Plan.
Sadog Tasi or Lake Susupe Wetlands	The Coastal and Estuarine Land Conservation Plan for the CNMI (CELCP 2008) focuses on these two particular wetlands as high priority. There is conflicting management jurisdiction between government agencies for wetlands. Discussion of comprehensive wetland management plan update has been challenging, but may support these efforts.
Mañagaha Marine Protected Area (MPA)	The management plan for Mañagaha Marine Conservation Area needs to be updated by appropriate agency, since the last plan was in 2005. There is conflicting management jurisdiction between government agencies for this specific area.
Sasanhaya Marine Protected Area, Rota	No existing management plan and needs to be updated by appropriate agency.
Coral Nurseries in Lagoon	Emerging restoration projects that need a management plan.
Priority Watersheds: Laolao, Achugao, Garapan	The expected completion is by middle to late 2020. Each of these watersheds will have their own updated plans through the Coral Reef Initiative.

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

The development of watershed management plans for three priority watersheds on Saipan is currently underway, with expected completion by mid- to late-2020. The three watersheds that will have their own plans are Garapan, Laolao, and Achugao. Garapan and Laolao will be updated from previous Conservation Action Plans (CAPs). A Watershed Soil Loss Assessment Stream Monitoring Report was completed in 2017 by Horsely Witten Group and the 2019-2020 Coral Fellow for the Talakhaya Watershed on Rota. The report provides a comprehensive summary of results from a two-phase, stream monitoring study of soil loss in the watershed from 2012 and 2017.

The revision and update of the Saipan Lagoon Use Management Plan (SLUMP; Horsely Witten Group) was completed in 2017, under a Section 309 strategy from the 2011-2015 assessment cycle. This SAMP describes the current use of the Saipan Lagoon, is based on extensive stakeholder participation, and includes recommendations for better management of the various conflicting uses.

DFW created plans for designated Marine Protected Areas (MPAs), such as Bird Island, however these are in need of a ten-year update. Mañagaha, an islet off the coast of Saipan, receives hundreds of thousands of visitors each year and is marketed for its scenic ocean views and beautiful coral ecosystems. The Mañagaha MPA contains many coral species, such as *Acropora* and *Montipora*, in the outer barrier reef and the reef patches (Schroer 2005). Since the Mañagaha MPA was created, the average of reef accreting substrate and fleshy coralline have seen a declining trend. The high volume of visitors contributes to coral damage within the swimming zone. Restoration and management work such as marine monitoring, coral nurseries, and invasive crown-of-thorns seastar extraction are conducted regularly. CZM has the potential to lead the update to this plan with restoration activities, but will require collaboration with DFW. An updated Mañagaha MPA plan could aid in creating new activities promoting the recovery of corals within the swim zone caused by damages from swimming and snorkeling activities.

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	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
SAMP policies, or case law interpreting these	Y	Y	N
SAMP plans	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.

The SLUMP (Horsley Witten Group) was recently updated in 2017 under DCRM to include twelve recommendations focusing on addressing resource management as well as management of marine sports operations and lagoon users. The completion of the SLUMP is a CZM-driven change, resulting from a Section 309 strategy under the 2011-2015 assessment cycle. The outcomes of this update include the added capacity and technical support of a NOAA Coastal Management Fellow, who is establishing a pilot stakeholder-informed methodology for determining user capacity thresholds for both well-known and emerging tourist sites now referred to as “Sustainable Sites”. Additionally, DCRM is drafting the Saipan Lagoon User Education Plan (SLUEP), followed by a Marine Sports Operator (MSO) Workshop for stakeholder collaboration. MSOs are currently being engaged for their input and feedback regarding this initiative. The SLUEP will aid as guidance for a Northern Marianas College (NMC) course targeting MSOs in properly utilizing the Saipan Lagoon. MSOs who are certified upon completion of the course may receive discounts to their MSO permit through DCRM.

The NOAA CRCP-funded Coral Reef Initiative (CRI) within DCRM is currently executing Integrated Watershed Management Plans for the watersheds of Achugao, Garapan, and Laolao; as well as reviewing the Talakhaya Watershed Plan. These plans are being updated by the Horsley Witten Group and Koa Consulting. The updating process includes data gathering, a stakeholder watershed workshop (held in January 2020), and reactivation of the CNMI Watershed Working Group returning from a two-year hiatus. The Talakhaya Watershed plan is currently under review and was originally developed through the added capacity of the 2018-2019 NOAA Coral Reef Management Fellow. Although the CZM program collaborates with the CRI program, these are not CZM driven changes, but rather through the efforts of the CRI program. The outcomes of these planning efforts will include completed integrated plans, regular meeting and collaboration between members of the Watershed Working Group, and implementation of objectives from these plans.

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 SAMP enhancement area was evaluated at medium importance based on stakeholder feedback and the current status. Although SAMP only received a few votes on the lower end of the spectrum for stakeholder priority, SAMP continues to be a significant portion of DCRMs planning. According to the survey, a few stakeholders expressed concern over the need for better enforcement, regulation, private and government collaboration, and interpretation of current SAMP regulations and policies. CNMI watersheds and the Saipan

Lagoon have been the main SAMPs addressed throughout this current cycle, and DCRM is currently working on enacting some of the recommendations from the recently completed SLUMP update. Through the NOAA CRCP, DCRM is working with contractors to develop Integrated Watershed Management Plans for the Saipan priority watersheds of Achugao, Garapan, and Laolao, and Talakhaya watershed on Rota; and the planning for these areas is currently on track. The most concerning area for SAMP is with MPAs in need of updated plans, but they are under jurisdiction of DFW. Through this next cycle, DCRM will opportunistically work with DFW on MPAs in order to address SAMP.

Ocean and Great Lakes Resources

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

Resource Characterization

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. 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.

Status of Ocean and Great Lakes Economy for Coastal Counties (2011-2015)

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	6667-8339	33-128	154-173	20-99	206-487	20-99	6234-7353
Establishments (# of Establishments)	569	17	23	1	18	1	509
Wages (Millions of Dollars)	N/A	N/A	N/A	N/A	N/A	N/A	104 ¹¹
GDP (Millions of Dollars)	N/A	N/A	N/A	N/A	N/A	N/A	165 (2015) 574 (2017) ¹²

2. 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 Reports, 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.

¹¹ Reflective of Accommodations and Amusement from U.S. Dept of Commerce Bureau of Economic Analysis, Nov 2019 Release

¹² GDP of all of CNMI = \$ 922 million

Uses within Ocean or Great Lakes Waters

Type of Use	Number of Sites
Federal sand and gravel leases (<i>Completed</i>)	NA
Federal sand and gravel leases (<i>Active</i>)	NA
Federal sand and gravel leases (<i>Expired</i>)	NA
Federal sand and gravel leases (<i>Proposed</i>)	NA
Beach Nourishment Projects	NA
Ocean Disposal Sites	4 (within 10nm)
Principle Ports (<i>Number and Total Tonnage</i>)	NA
Coastal Maintained Channels	3 (within 1nm)
Designated Anchorage Areas	5 (within 1nm)
Danger Zones and Restricted Areas	Farallon de Medinilla (FDM), Tinian ¹³

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

Significant Changes to Ocean and Great Lakes Resources and Uses

Resource/Use	Change in the Threat to the Resource or Use Conflict Since Last Assessment (↑, ↓, -, unknown)
Benthic habitat (including coral reefs)	↑
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	↑
Sand/gravel	unknown
Cultural/historic	unknown
Transportation/navigation	↑
Offshore development (including underwater cables and pipelines)	↑
Energy production	-
Fishing (commercial and recreational)	-
Recreation/tourism	↑
Sand/gravel extraction	-
Dredge disposal	-
Aquaculture	-

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.

¹³Current military training activity on military-leased lands results in periodic closure of ocean areas three nautical miles and the northern island of Farallon de Medinilla. Proposed training activities on Tinian may result in periodic closure of land and ocean areas around Tinian in the future.

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- Storms and Typhoons	Other- Military activities	Other- Ocean temperatures	Other -derelict vessels
Benthic habitat (including coral reefs)	X	X	X	X	X		X	X			X	X	X	X	X
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	X		X	X	X		X				X	X	X	X	
Transportation /navigation												X	X		
Offshore development (including underwater cables and pipelines)												X			
Recreation/tourism	X		X				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 *Value of Ecosystem Services from Coral Reefs and Seagrass Habitats in the CNMI* (Eastern Research Group 2019) was a comprehensive analysis and valuation of the benthic resources of the CNMI. The report determined that coral reefs of the CNMI generate \$104.5 million annually in economic value, with 58.9% from foreign tourism producer surplus, 18.5% in coastal protection, and 7.6% in recreation consumer surplus.

A mooring buoy survey report was conducted in late 2017 (PCRP 2017a). This project surveyed all existing mooring buoys around the islands of Saipan, Tinian, and Rota, and developed a maintenance and enhancement plan based upon in-water assessments and stakeholder input. This enhancement and maintenance plan was implemented by PCRP, and most buoys were either replaced or cleaned as per recommendations in the 2017 report. Continued, regular maintenance is recommended.

The NOAA Coral Reef Conservation Program (CRCP) and the University of Maryland Center for Environmental Science produced a coral reef condition report for CNMI's coral reef habitats in 2018. The report assessed the CNMI's coral reefs to be in "Fair" condition, and outlined threats and recommendations for management and enhancement of the habitat.

The 2018 CNMI 305(b) and 303(b) Integrated Water Quality Assessment Report (Yuknavage 2018) includes an assessment of water quality impacts on benthic habitat in Saipan's watersheds. BECQ staff are now trained to perform EPA Method 353.2, which provides accurate and scientifically defensible nutrient levels in marine water. Currently, a few reef flat

sites of Rota and Tinian and beach monitoring sites on Saipan have received data collection. BECQ is no longer using orthophosphate as a factor of the *Propagation of Aquatic Life* DU due to results proving its inaccuracy. The laboratory is adopting two qPCR methods which will look into *Enterococci* levels and fecal contamination origins.

The CNMI's Long Term Marine Monitoring Program continues to conduct benthic surveys and documented extensive bleaching events from 2014 to 2017. The largest bleaching event was in 2017. Bird Island experienced mortality rates of over half of its coral colonies during this 2017 bleaching event. In 2018, Typhoon Yutu brought storm surge that hit reefs and pulled storm debris into water, damaging coral colonies. Generally, these disturbances resulted in declined reef health and coral cover at long-term monitoring sites. *Acroporidae* has experienced significant decrease in density in all islands. Reports resulting from this monitoring program supports the importance of improving water quality and fisheries management to support reef health and resilience (BECQ-DCRM, 2019).

A NOAA Technical Memorandum entitled "Benthic Habitat Maps of Saipan Lagoon" (Kendall et. al. 2017) was an in-depth analysis of satellite imagery paired with in water ground truthing of the benthic habitats of the Saipan Lagoon. This report includes comparisons to previous studies of the extent of types of benthic habitat in order to assess habitat degradation.

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	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
Statutes, regulations, policies, or case law interpreting these	N	N	N
Regional comprehensive ocean management plans	N	N	N
State comprehensive ocean 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.

There are no significant ocean and great lakes resources management changes in the CNMI.

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)	N ¹⁴	N/A
Under development (Y/N)	N	Y, Marianas Trench Marine National Monument: NOAA Fisheries and the U.S. Fish and Wildlife Service are working with the CNMI Government, Department of Defense, Department of State, U.S. Coast Guard, and others to develop a monument management plan.
Web address (if available)	N/A	https://www.fisheries.noaa.gov/pacific-islands/habitat-conservation/marianas-trench-marine-national-monument https://www.fws.gov/refuge/mariana_trench_marine_national_monument/
Area covered by plan	N/A	95,216 square miles (246,608 square kilometers) of submerged lands and waters of the Mariana Archipelago east of the Philippines

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.

Based upon stakeholder feedback, Oceans and Great Lakes Resources was valued as a medium to high level priority area because it received an above average amount of votes. However, it was evaluated as a medium level of priority, because the concerns that stakeholders had regarding this enhancement area crossed into other areas included marine debris and pollution, overfishing, and declining reefs due to various reasons such as tourism and marine sports. These particular components of the larger ocean resources spectrum are currently being addressed by DCRM and the Coral Reef Initiative through current marine debris outreach and education programs, special area management planning for marine sports operators, and the long-term marine monitoring program.

¹⁴ A CNMI Ocean Plan was under development through the Pacific Islands Regional Planning Body, but this plan was not completed as this regional ocean planning initiative was dissolved under the current administration.

Fishing management is under the jurisdiction of Department of Fish and Wildlife. The economy of the CNMI is dependent almost entirely on tourism, and ocean resources are some of the main attractions that foreign visitors look for in the CNMI as a tourist destination. Commercial fisheries are often small scale and feed into the local economy, rather than exports. Ocean resources are also important culturally and for subsistence use through fishing; as well as the intrinsic value found in recreational activities. DCRM will continue to address these issues through existing programs and focus efforts for this assessment on higher priority areas.

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)

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.

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

Type of Energy Facility/Activity	Exists in Coastal Zone	Change in Existing Facilities/Activities Since Last Assessment (↑, ↓, -, unkwn)	Proposed in Coastal Zone	Change in Proposed Facilities/Activities Since Last Assessment (↑, ↓, -, unkwn)
Pipelines	Y	-	Y	↑ (There are proposed changes to add a new pipeline in Tinian)
Electrical grid (transmission cables)	Y	-	N	-
Ports	Y	-	N	↑ (There are proposed changes to repair an existing harbor in Tinian)
Liquid natural gas (LNG)	N	-	N	-
Oil and gas	Y	-	N	-
Coal	N	-	N	-
Nuclear	N	-	N	-
Wind	Y (small scale)	-	N	-
Wave	N	-	N	-
Tidal	N	-	N	-
Current (ocean, lake, river)	N	-	N	-
Hydropower	N	-	N	-
Ocean thermal energy conversion	N (was some exploration activity previously but no action)	-	N	-
Solar	Y (small scale)	↑ (some additional installations)	Y	↑ (There are proposed changes to add a solar farm in Saipan)
Biomass	N	-	N	-
Geothermal	N (was some exploration on this activity previously but no action)	-	N	-
Conversion of non-recyclable municipal wastes	N (was some exploration on this activity previously but no action)	-	N	-
Solid Waste Management Facility	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.

Oil and gas remain the source for almost a hundred percent of the energy generated in the CNMI. As one of the only sources of alternative energy, small scale solar activities exist and have been increasing through private use. Solar energy from customers are connected to the Commonwealth Utilities Corporation (CUC) power grid, and their energy use from solar are factored into their existing power use. Since all of the solar energy in CNMI is currently small scale and supplemental, the amount of energy generated and used are not clearly monitored and documented, and CUC has not yet had to determine how they would implement and regulate alternative energy. CUC has looked into the idea of alternative energy on the roof tops of government buildings, along with solar microgrids. There may be issues with the landowners for leased buildings such as the profits for this endeavor benefitting landowners, so they would incentivize transition into government owned businesses.

Aside from energy facilities, rehabilitation of the ports in Smiling Cove, Saipan and Tinian Harbor damaged by Typhoon Yutu are underway. DFW has procured funding from FEMA to repair damages to these ports. The DOD is currently making additional repairs to port facilities in Tinian Harbor such as repair of the Roll-On-Roll-Off Ramp, walls, berths, and a concrete pad. Tinian has developed a refuse transfer station for solid waste, and the EPA granted a Resource Conservation and Recovery Act (RCRA) small systems waiver for Tinian and Rota. Planning to support RCRA compliant waste management is underway but the current non-compliant facilities continue to pose coastal resources concerns.

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

As part of the military buildup in the Marianas, the DOD has increased development on Tinian, and with that have been additional proposed activities from the private sector and local government. The expansion on Tinian includes the Divert project pipeline by the US Air Force, which would serve to transport fuel from the airport to the port as a backup station for Andersen Air Force Base on Guam. The Air Force has completed the NEPA, CZMA, and local permitting processes and is moving forward with further planning and construction. Along with the repairs to the Tinian port, the US Navy is utilizing Construction Battalion (CB) troops to repair roads and build camps for troops. In line with this are proposed activities from the private sector and local government, such as developing housing areas.

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	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
Statutes, regulations, policies, or case law interpreting these	Y	N	N ¹⁵
State comprehensive siting plans or procedures	Y	N	N

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

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.

Based on stakeholder feedback from various government agencies, energy and government facility received the lowest priority rating. An interview with a local based stakeholder from CUC was conducted to identify changes that have happened since the previous five-year cycle. However, after the stakeholder surveys were conducted, many activities related to non-energy related government facilities materialized and upon evaluation DCRM increased this level of priority to medium. The CNMI has not made aggressive steps towards alternative or renewable energy use and continues to be dependent on imported fuel to maintain the electric grid. Solar remains the most promising alternative energy source, because it is available privately, but the installation costs are a deterrent for many residents. Currently, the CUC lacks capacity to upgrade existing facilities and recently has had to focus on maintaining these systems especially after major typhoons.

¹⁵ As mentioned with the production of a waste transfer station, EPA granted a Resource Conservation and Recovery Act (RCRA) small systems waiver for Tinian and Rota. This was not a CZM-driven change, and the station is not yet operational.

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)

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.

Status and Trends of Aquaculture Facilities and Activities

Type of Facility/Activity	Number of Facilities	Approximate Economic Value	Change Since Last Assessment
Aquaculture farms	<ul style="list-style-type: none"> • NMC CREES A&NR Species: Forktail Rabbitfish (<i>Siganus Argenteus</i>) • Matsumoto Farms Species: Tilapia Total # of Farms= 2	<ul style="list-style-type: none"> •NMC CREES A&NR \$1 Million •Matsumoto Farms = \$100K 	↓
Tanks	<ul style="list-style-type: none"> • NMC CREES A&NR = 5 Species: Forktail Rabbitfish • Matsumoto Farms = 1 Species: Tilapia Total # of Tanks = 6	<ul style="list-style-type: none"> •NMC CREES A&NR = \$800K •Matsumoto = \$60K 	↓
Aquaponics	Total = 1 Rota Aquaponics Education Center (RAEC) with Aquaculture Training and On-line Learning (ATOLL)	RAEC = \$100K	-
In-water Coral Nursery	Total # of Coral Nurseries = 2 <ul style="list-style-type: none"> • NOAA/JAMS Nursery • BECQ/DOI Nursery 	Total: \$80K	↑

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.

NMC CREES

In January 2017, the Northern Marianas College – Cooperative Research Extension and Education Service (NMC CREES) Aquaculture and Natural Resource Program opened the Center for Aquaculture Development to fulfill the mandates of CNMI Public Law 15-43 (Commonwealth Aquaculture Development Act of 2006) and for research and extension purposes. This program will be used for research and improvement of forktail rabbitfish (*siganus argenteus*) production, a high value product. The project progress allowed NMC to acquire federal funding through the following grants in order to improve the project:

- NOAA/DLNR-MCP to NMC CREES A&NR for Forktail Rabbitfish Project, 1 Year, \$70K
- USDA-NIFA to NMC CREES A&NR to continue Forktail Rabbitfish Project, 3 Years, \$570K

- USDA-NIFA to NMC CREES A&NR for Copepod Project (production of food for Rabbitfish), 3 Years, \$460K

NMC-CREES held CNMI-wide stakeholder sessions in 2018 to gather data and stakeholder engagement to update the 2011 -2015 CNMI Aquaculture Development Plan. The updated plan is expected to be completed and released in 2020. The plan will be used to guide future efforts for aquaculture in CNMI with NMC-CREES as the lead agency. This includes expanding programs in Rota and Tinian.

RAEC-ATOLL

A small-scale aquaponics education center on the island of Rota, has existed since approximately 2013, but was not listed in the last assessment. The center is supplemented by an education and training program through a \$260,000 grant from US DOI; and is managed through the collaborative efforts of the Rota Mayor’s Office DLNR, Department of Commerce and Public Works, and NMC-CREES. The educational program, known as Aquaculture Training and On-line Learning (ATOLL) was developed for the island of Rota and integrates classroom lectures and aquaponics hands-on training for five employees.

In-Situ Coral Nurseries

Two coral nurseries are currently being established and piloted within the Saipan Lagoon, one funded by NOAA and implemented by the local contractor Johnston Applied Marine Sciences (JAMS), the second funded by Department of Interior through BECQ and implemented by the contractors Micronesia Environmental Services and Lynker Technologies. The NOAA nursery is located within the Mañagaha MPA and utilizes nursery tree designs to propagate five different coral species from corals of opportunity fragments transferred from selection sites. Along with restoration of coral due to bleaching events, storms, and *Acanthaster Planci*, the coral nursery will also function to provide aquaculture services as habitat to support fish reproduction.

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.

Significant Changes in Aquaculture Management

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

There are no significant aquaculture facility management changes in the CNMI.

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.

Aquaculture has been identified as an area of potential opportunity for the community to develop more self-sustaining methods of food production, and several projects are currently underway. However, at this time aquaculture is not a major industry in the CNMI. An interview with the main point of contact for aquaculture in the CNMI, a local based stakeholder from NMC-CREES, was conducted to identify changes that have happened since the previous five-year cycle. The increase in funding and activity at NMC-CREES, as well as the new in-water coral nurseries and restoration work warrant regular monitoring and awareness on the part of DCRM in order to be ready for the possibility of an increase in aquaculture activities in the future.

Phase II (In-Depth) Assessment

Wetlands

In-Depth Resource Characterization

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
Stressor 1	Development/fill	Saipan, Tinian, and Rota
Stressor 2	Pollution	Primarily Saipan and Tinian. Pagan is a secondary geographic area of concern due to proposed military land use that would impact its wetland systems.
Stressor 3	Invasive Species	Saipan, Tinian, and Rota. Saipan is the primary focal area due to existing, persistent invasive vegetation within its wetlands; however, invasive species also pose a threat to the other two southern islands following natural disturbances such as typhoons or fires.

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.

Development/Fill

Development and fill remain a significant threat to wetland areas due to the surge of development proposals continuing from the previous cycle. Since 2014, the boom of foreign investment and tourism market growth have inflicted development pressures on CNMI's limited land availability by encroaching on wetland areas. Since the previous Section 309 Report, DCRM addressed the influx of development proposals through enhancing its wetland definition, establishing wetland buffers within the Wetland APC, and integrating the mitigation hierarchy tool into regulation to mitigate/offset wetland development through permitting and enforcement. The *Economic Valuation Study of CNMI Inland Wetlands* (Wolfs Company 2019) serves as an important ecosystem services assessment that can be used to identify and protect high quality wetlands from development/fill through permitting. This study builds on on-going wetland valuation efforts through identifying ecosystem services for priority wetlands on Saipan, Tinian, and Rota. The report identified the following wetlands on Saipan as being under pressure from development/fill: Lower Base wetland, As Mahettok wetland, Susupe wetland complex, American Memorial Park wetlands, Chalan Kiya wetlands, and Puntan Achugao wetlands (Wolfs Company 2019). The map of Saipan below highlights

these wetlands using spatial data from the report and provides their approximate size, along with a map of wetland systems in Tinian and Rota.

Figure 1: Map of High Value Wetlands and Streams of Saipan.

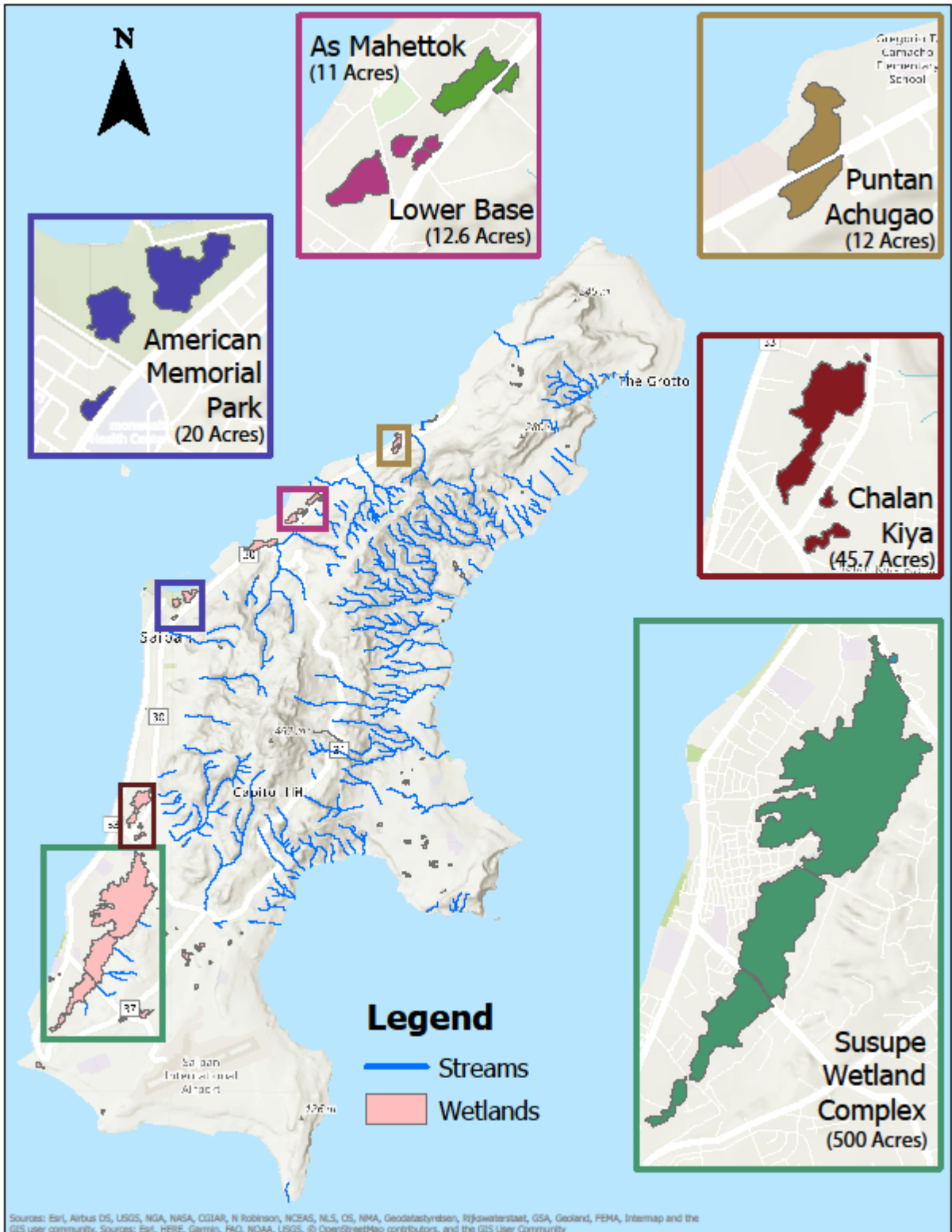
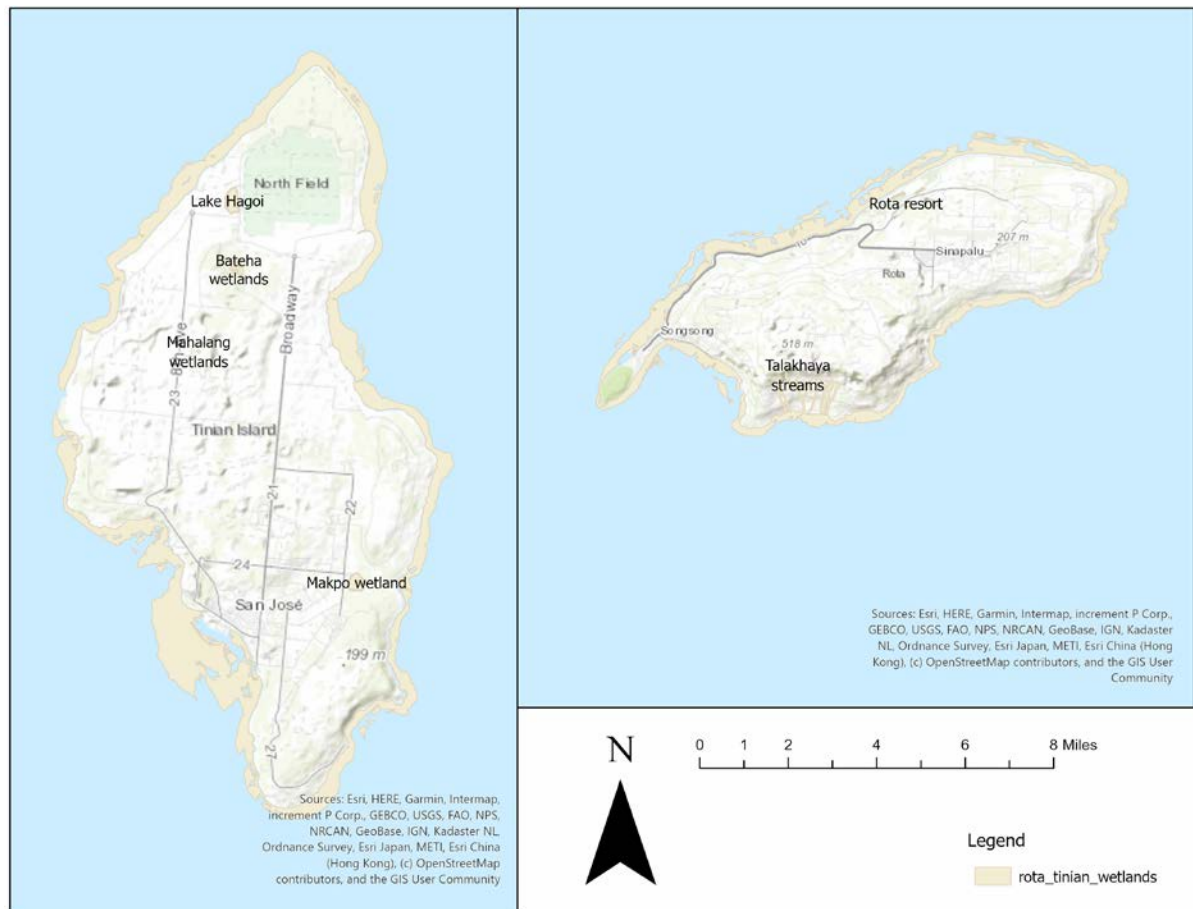


Figure 2: Map of Wetlands in Tinian and Rota



The integration of these tools has improved DCRMs “no-net-loss” wetland policy, however wetland valuation has yet to be implemented into the permitting system.

Nonetheless, wetland development and fill persist due to unpermitted fill conducted by landowners and developers utilizing mitigation rather than prevention as the frequent approach to addressing loss of wetlands. Enforcement also issues violations for wetland fill not permitted in development projects. These persisting issues call for more robust tools in avoiding wetland destruction and stronger political willpower to protect wetland areas. A mechanism that DCRM has successfully implemented through its permitting structure is the inclusion of conditions that permittees must follow. In 2018, DCRM permitted several development projects within the Achugao watershed and added mandatory conditions that the developer must follow to better manage wetland resources on the property. One development in particular, the Saipan Garden Resort originally proposed by the American Sinopan development group, was required to work with DCRM and DLNR-Forestry to maintain and enhance the vegetation of the wetland stream and buffers of the project site (DCRM Permit # SMS-2018-X-020).

However, DCRM has limited comprehensive documentation on the progress and effectiveness of on-going wetland mitigation projects that are overseen by DCRM Permitting

and Enforcement. Regular monitoring of wetlands and continued wetland delineation may increase the understanding of the risk of wetlands to development and pollution degradation and help aid with the enforcement of current wetland protection policies.

Through the 309 survey, key stakeholders identified development as a continuing stressor to wetlands. Stakeholders expressed the need for better interagency management, stronger permitting approaches and regulations to prevent wetland loss, increased awareness of the wetland function and benefits to the community, increased funding for programs aimed to protect and maintain high valued wetlands, and seed bank/nursery for restoration work. The CNMI Interagency Watershed Working Group (WWG) is one avenue in which DCRM can strengthen interagency collaboration on wetlands and update a comprehensive wetland management plan.

Pollution

Non-point source pollution continues to be a stressor to wetlands in the CNMI. Wetlands of the CNMI provide valuable pollution and sediment removal services, estimated at nearly \$5 million annually (Wolfs Company 2019). However, persisting non-point source pollution may push the limit of the wetland ecological threshold and impact the wetlands’ ability to provide this valuable ecosystem service. As cited in the 2017 Saipan Coastal Bacteria TMDLs report, the highest exceedances of Enterococcus bacteria occur when rainfall is high. A bacteria trends analysis was conducted at Susupe Lake (18LAK) site for the 5-year period (2011-2016) prior to the publication of the report. In this specific dataset, the samples obtained exceeded CNMI water quality standards when periods of greater rainfall occurred which indicates pollution likely due to storms and human impacts. The following table demonstrates this relationship. Potential sources of wetland pollution are sewer systems overflow, road runoff, construction runoff, and agricultural waste and fertilizer runoff (DEQ 2017)

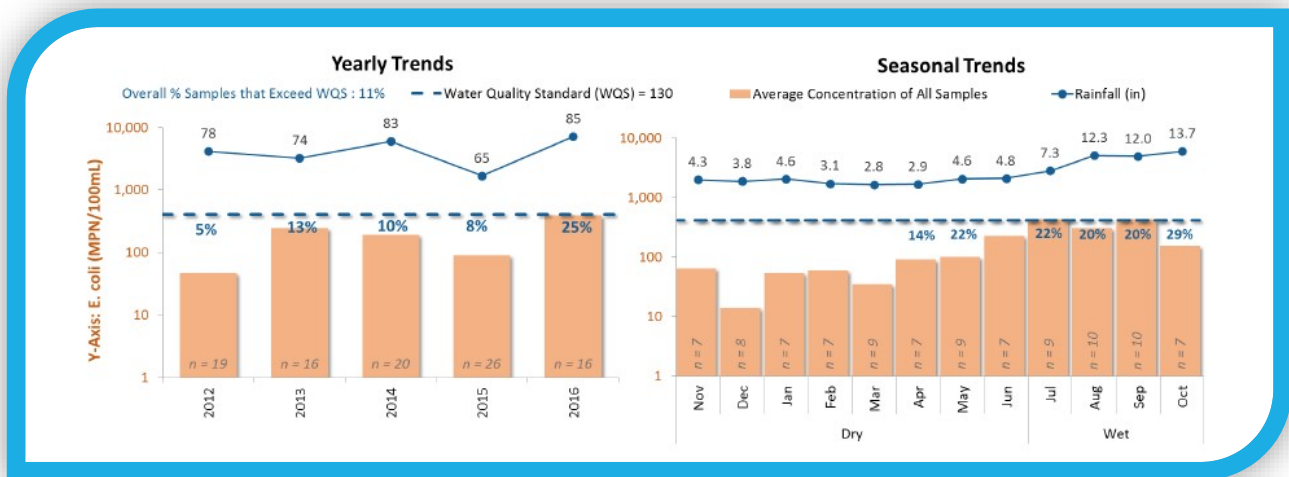


Figure 3: Five-year analysis of bacterial trends at Susupe Lake located in Susupe, Saipan. E. coli (MPN/100mL) for Lake Susupe (18LAK). Total Maximum Daily Loads for Coastal Waters Impaired by Bacteria in Saipan.

Extreme rainfall events during the wet season transport pollutants and sediments from inland residential, business, and agricultural areas into wetland areas and impairs water quality. In

the North Susupe watershed, Lake Susupe is the receiving waters of upland residential and agricultural storm water. In addition to this pollution pressure, wetlands are often targeted as places for illegal dumping as proven by continuing enforcement violations. On Tinian, current and proposed military activities surrounding wetland areas threaten wetland vegetation and wildlife. Pagan wetlands face the possible threat of pollutants generated from proposed military expansion, degrading its provisioning services for wildlife. Further delineation of wetland boundaries is necessary to identify potential sources of pollution through documenting hydrology. Delineation of smaller wetlands may also be helpful to identifying whether these wetlands are threatened by pollution and address their sources.

Invasive species

Invasive species continue to alter wetland hydrological functions as they encroach from surrounding areas, modifying water passage, changing water quantity and quality, and many other processes. Development or other disturbances on land in close proximity to wetlands allow invasive vines and other plants to propagate and spread into wetland areas. Wetlands on Tinian are vulnerable to increased invasive species due to impacts associated with the military build-up. Currently, protected wetlands are invaded by species such as *Eitchhornia crassipes*, *Pluchea indica*, and *Annona glabra*. Free roaming ungulates and other animals were also identified as a concern by local stakeholders.

Surveys of wetlands on public lands that included ground-truthing of boundaries were completed on public lands during the last planning cycle. Delineation and surveys have been conducted in Susupe, West Takpochau, and Achugao wetlands on a case-by-case basis, dependent on the needs of private landowners. Additional analysis conducted with field tools developed by DCRM (RAM and SVAP), satellite imagery, and the 2017 National Hydrographic Dataset, and other GIS data layers indicate potential water quality degradation by the presence of invasive flora and possible hydrological alterations from fill. In the process of delineating each wetland system, areas that are affected by invasive species at wetland systems. Doing so will allow the agency to identify species that may impact the hydrologic function of certain wetlands. DCRM intends to expand on the efforts of previous delineation efforts to identify opportunities to address the presence of invasive species.

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
Climate change-related drought impact on wetland and water resource management	Localized data on precipitation patterns and continued development of localized/regional modeling
Potential sea level rise-impacted wetland migration	Assessing which wetlands will migrate and what areas they may migrate to. This issue is particularly important for potential impacts to estuarine wetlands (mangroves) on Saipan.

In-Depth Management Characterization

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

Significant Changes in Wetland Management

Management Category	Employed By State or Territory	CMP Provides Assistance to Locals that Employ	Significant Changes Since Last Assessment
Wetland assessment methodologies	Y – RAM is integrated in process and is available as a GIS survey; SVAP is being applied by DEQ	Y	Y – Adoption of RAM and other wetland assessment tools
Wetland mapping and GIS	Y – mapping, delineation for APC	Y	Y – Inclusion of wetland buffers into wetland APC layer
Watershed or special area management plans addressing wetlands	Y – Particularly through increased capacity of Watershed Coordinator and Coral Fellow(s)	Y	Y – Watershed management extends to Achugao
Wetland technical assistance, education, and outreach	Y	Y	Y– CNMI Wetland plant ID guide 2018
Other: Wetland mitigation	Y	Y	Y– Wetland buffer, no net loss policy

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.

DCRM implemented a mitigation hierarchy into the DCRM permitting process in 2018, as described under the Wetlands Phase 1 Assessment above. This was a CZM-driven change that will incorporate stricter permitting regulations for development in wetlands.

DCRM developed its Rapid Assessment Methodology (RAM, 2015) and its supplemental Stream Visual Assessment Protocol (SVAP, 2018), as described under the Wetlands Phase 1 Assessment above. This was a CZM-driven change that will streamline assessment methodology when delineating and updating boundaries in order to ensure “no net loss” and support future permitting and planning decision making.

“Establishing Wetland Buffers in CNMI to Protect ‘Environmentally Sensitive Areas’ and Ensure ‘No Net Loss’” - Wetland buffers were added to the Wetland APC GIS layers in 2017, as described in the Wetlands Phase 1 Assessment above. This was a CZM-driven change with future outcomes being more protection of critical wetland areas with buffer zones, improved water quality, and improved wildlife habitat.

Although not a CZM-driven change, integrated watershed management planning led by the CNMI's CRI will extend to the Achugao watershed. The six natural priority wetlands valued by Wolfs Company (2019) are found within Achugao. The new watershed plan will increase monitoring and protection for the area. This may provide opportunities for future CZM-driven changes.

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?

Data Gaps

- DCRM has limited documentation to assess the progress and effectiveness of on-going wetland mitigation projects that are overseen by DCRM Permitting and Enforcement. Regular monitoring of wetlands may increase the understanding of the risk of wetlands to development and pollution degradation and increase enforcement of current wetland protection policies.
- There is a lack of updated reports and studies on wetland management, restoration, and enhancement. The last comprehensive wetlands management plan for the CNMI was produced in 1991, and the last state of the wetlands and recommendations for wetland policy report was prepared in 2005. Jurisdictional challenges with interagency collaboration since then have resulted in a stasis for further updates. For GIS, a dashboard for wetland mitigation/loss/quality could also be beneficial.

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.

Management Priority 1: Wetland delineation and valuation

DCRM needs to continue delineation and valuation of wetlands to support oversight and permitting of projects within or in close proximity to the Wetland APC. Currently, wetland APC is occasionally called into question. Both delineation and associated mapping/GIS data need to include more thorough documentation of methods and sources to improve resource characterization of wetlands, and be incorporated into regulations or program changes. Due to high staff turnover since the previous Section 309 report, DCRM needs to rebuild technical capacity to support this management priority. Efforts to continue cross-training with the Department of Lands and Natural Resources and the Department of Public Lands which have co-management authority is encouraged.

Management Priority 2: Wetland mapping and updated GIS database

Following the continued delineation of wetlands, DCRM would seek to develop an improved wetland APC GIS layer. The creation and continued maintenance of a wetland specific GIS database would greatly help ongoing management by tracking wetland loss or wetland mitigation projects, well as support wetland migration and related conservation planning discussions.

Management Priority 3: Improved interagency collaboration regarding wetland management

Due to the complex nature of land jurisdiction in the CNMI, wetland protection relies on effective interagency and stakeholder collaboration, which continues to be a challenge. There has not been an update for a wetlands management document since the CNMI “Recommendation Wetland Policy” document update in 2005. The 2018-2023 DCRM Strategic Plan includes a recommendation to update this document, which could promote better interagency collaboration. DCRM hopes to collaborate with other agencies to create an updated management plan within this five-year cycle.

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.

There is a need for continued wetland delineation and assessments in order to update maps and allow managers to better understand essential information of each wetland, such as the quality, function, observed fauna and flora, and the size. In order to build staff capacity, as well as to continue more accurate delineations of wetlands, trainings for current rapid assessment methodologies for wetlands and streams for DCRM staff and staff partners will be conducted. Utilizing these proven methods to ground-truth wetlands, especially those on private lands, will be essential to strengthening wetland management and monitoring changes in wetland areas and mitigation spatial data. A regularly updated GIS database may be beneficial in the monitoring and enforcement of wetland loss and mitigation as well as provide an informative tool for interagency wetland collaboration efforts, and will assist in building transparency and justification for wetlands regulations. Lastly, tracking habitat gain or loss is one of DCRM’s 2018-2023 CZMA Section 312 Evaluation Metrics for government coordination and decision making, in order to achieve no net loss of critical wetlands habitat.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	N	
Mapping/GIS	Y	Continued delineation and mapping of wetlands and buffer zones.
Data and information management	Y	Need for a comprehensive wetland monitoring GIS database capturing wetland status and loss due to lack of organized and consolidated data interface.
Training/capacity building	Y	Wetland delineation training (DCRM staff); interagency collaboration and training
Decision-support tools	Y	Trainings for RAM and SVAP will aid DCRM in determining wetlands delineation and these determinations will be used when evaluating wetlands for APCs or major siting permits
Communication and outreach	Y	Build community awareness regarding wetland function and benefits to avoid development in wetland areas and increase community appreciation of wetland areas.

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.

Wetlands were ranked as the top priority through the Section 309 stakeholder consultation, and pressures on wetlands, specifically development and non-point source pollution, continue to be a high priority issue facing the CNMI and DCRM. DCRM intends to build off of the momentum generated by recent wetland-related research and studies to incorporate new and improved wetland management systems into DCRM regulations and permitting processes, and expand DCRM staff capacity and training.

Coastal Hazards

In-Depth Resource Characterization

1. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards 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
Hazard 1	Coastal storms (including storm surge)	Saipan, Tinian, Rota, Pagan, Alamagan
Hazard 2	Sea Level Rise	Saipan: Lower Base, Garapan, Susupe. Rota: Songsong Village Tinian: San Jose
Hazard 3	Shoreline erosion	Saipan: "Beach Road" (Garapan to Chalan Kanoa) Coastline, American Memorial Park, Micro Beach, Hyatt, Fiesta, Sugar Dock, Pacific Islands Club, and Managaha Rota: Beaches along NW shoreline Tinian: Tachogna beach

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.

Coastal storms (including storm surge)

Coastal storms, in the form of tropical cyclones (typhoons), "southwesterly" monsoon systems, and associated storm surge, have had a stronger impact on the CNMI's coastal resources and population than any other hazard. Within the last five years, several events have demonstrated the significance of this type of hazard and the consistent need for the coastal management program to address it.

In August of 2015, Typhoon Soudelor (Category 4) made landfall on the island of Saipan, causing over \$20 million dollars in property damage alone for coastal residents. Many of the resources that DCRM manages as APCs were severely impacted, including the groundings of three vessels on sensitive coral reefs as well as damage to the Port of Saipan causing a 500-gallon diesel fuel spill within DCRM's 'Port and Industrial' APC (NOAA NCEI 2015). Three years later, Super-Typhoon Yutu (Category 5, October 2018) and Typhoon Mangkhut (Category 3, Sept 2018) impacted Saipan, Tinian, and Rota, causing catastrophic damage (over \$800 million) that the CNMI is still recovering from. Debris from Yutu can still be found scattered along Saipan's lagoon and fringing reefs, and residents whose livelihoods depend on fishing or marine-based tourism suffered losses in the form of access to resources and income.

Stakeholder input at various points in time over the last decade has reinforced the importance of addressing coastal storms. Climate vulnerability workshops held with community members on the islands of Saipan, Tinian, and Rota involved focused discussions around various climate stressors (sea level rise, coral bleaching, drought, etc.), but the vast majority of participation highlighted historic storm events, while discussions about climate change projections largely focused on anticipated impacts from future storms and associated coastal flooding (BECQ-DCRM 2015b; Greene and Skeelee 2014). These community concerns regarding coastal storms and flooding are understandable given that

the highest densities of population, economic activity, critical infrastructure, and vulnerable demographics all reside within areas subject to future storm surge (Greene & Skeelee 2014).

Most global and regional climate models and projections suggest that the frequency of typhoons, including those that pass through the Marianas, will decrease; however, maximum intensity of these future storms is likely to increase (Grecni et al. 2020). This future outlook presents both opportunities and challenges for the CNMI. Storms of higher intensity may have even greater impact on critical coastal infrastructure that becomes weakened during prolonged periods of inactivity, yet these same calm periods present windows in which DCRM and its partners may work to build resiliency to future events. Therefore, coastal storms present both a major threat, and a rallying point for building interagency and multi-sector partnerships.

In addition, a spike in storm awareness throughout CNMI in recent years has led resource managers and researchers to draw stronger connections between future coral reef health and impacts from storm surge. This is an emerging aspect of coastal storm hazards in tropical environments, and warrants greater attention in the coming years. While the CNMI was mostly spared from damaging storm surge in recent typhoons, this was largely due to the protective capacity of its coral reefs. New data suggest that CNMI's reefs currently protect \$5.7 million in coastal buildings and structures, and \$8.2 million in economic activity from potential storm surge on an annual basis (Storlazzi et al. 2019). Under a 100-year (.01% annual chance) storm scenario similar to Super Typhoon Yutu, the reefs of Saipan, Tinian, and Rota could provide protection for over \$70 million in infrastructure and economic activity. Preparing for and adapting to a future coastal zone in which CNMI does not have this same level of protection from storms is crucial.

Sea level rise

Sea level rise (SLR) is a serious threat to the CNMI of which the entire jurisdiction is located in the coastal zone. The effects of SLR in the CNMI refer to both the long-term increases in mean sea level due to climate change, as well as the Sea Level Change (SLC) in mean sea level due to any variety or combination of short-term variability, extreme storm events, and long-term changes (Greene and Skeelee 2014, Greene 2017). Trends in the last decades have suggested higher than global rates (>10 mm/year) in the Western Pacific than the rest of the U.S. regions, and future relative SLR is amplified in Pacific islands due to static-equilibrium effects from their far-field location of all sources of melting land ice (NOAA NOS CO-OPS 2017). Although this SLR rate may be partially attributed to Pacific Decadal Oscillation (PDO) and El Niño-Southern Oscillation (ENSO), this is over three times the rate of the Global Mean Sea Level (GMSL) average from 1993 to 2010 and suggest that western north Pacific sea levels have the ability to change somewhat rapidly (Keener et al. 2012). An analysis for Saipan revealed SLC seasonal extremes for a 20-year return at a maximum base of 0.228 m, and an extreme scenario of 0.675 m; whereas a 100-year return predicts a maximum base of 0.628m and an extreme scenario of 1.846 m (Chowdhury et al. 2010, Greene 2017).

The CNMI Climate Change Working Group conducted a qualitative vulnerability assessment for Saipan, and results indicated that SLR will continue to affect important resources such as the coastline, drinking water, stormwater infrastructure, wastewater infrastructure, and fish and coral habitat; especially in Saipan's western coastal plain (Greene and Skeelee 2014).

This vulnerable western coastal plain contains all of the APCs managed by DCRM including shorelines, lagoon/reef, wetlands/mangroves, port and industrial, and coastal flood hazard zones. It also contains most of the economic assets for tourism on Saipan, both natural and developed areas, and SLR combined with other coastal hazards pose a large threat to an economy based mostly on tourism. As more intense storm events are expected and shoreline continues to erode, the combined climatic effects with increased SLR will contribute to additional consequences such as more powerful storm surges, flooding and inundated wetlands, damage to wildlife habitat and coastal communities, and damage to critical and non-critical infrastructure (Greene and Skeele 2014).

Although Rota and Tinian are considered “high islands”, supported by limestone terraces that elevate the majority of both islands from the effects of modest SLR, they have still experienced significant impacts from historic high and low sea levels (BECQ-DCRM 2015b). Rota and Tinian might expect increases in average sea level equal to or beyond those seen during ENSO, while long term SLR scenarios (50+years) would create more possibilities for chronic coastal erosion, nuisance tidal flooding, and decreased wave attenuation over reef flats due to greater depths (BECQ-DCRM 2015b).

Lower and upper bound limits of sea level extremes at 20- and 100-year return period								
<i>(Note that these are deviations of the extremes from the average seasonal signal)</i>								
*Results with typhoon-affected data are bold (in parenthesis), JFM, AMJ, JAS, and OND stand for January-February-March, April-May-June, July-August-September, and October-November-December								
	Sea level extremes (mm) at 20year Return Period				Sea level extremes (mm) at 100year Return Period			
	JFM	AMJ	JAS	OND	JFM	AMJ	JAS	OND
Saipan	98- 188	79- 152	122- 214	93-228 (127-675)	127- 285	97- 214	166- 333	57-628 (395-1846)

Adapted from: Chowdhury, Md. R., Chu, P., Zhao, X., Schroeder, T.A., and Marra, J.J. (2010). Sea level extremes in the U.S. Affiliated Pacific Islands—a coastal hazard scenario to aid in decision analyses. *Journal of Coastal Conservation*. 14:1, pp 53-62.

Figure 4: Lower and upper bound limits of sea level extremes at 20- and 100-year return period for Saipan Harbor

2017 Saipan Coastal Flood Mapping Updates: Scenario Descriptions						
Scenario	Data Code	Seasonal Extreme (meters)	Seasonal Extreme Description*	Sea Level Rise (m.)	Sea Level Rise Description**	Cumulative Sea Level Change (m.)
OND Seasonal Extreme (Typhoon Year)	OND_TY	1.85	Historically derived (1978-2003) maximum sea level for 100-year recurrence at Saipan Harbor, during the months of October - December including data from years with typhoon passage.	0	Climate change-related sea level rise not factored into this scenario.	1.85
50 years SLR	SLR50	0	No seasonal extreme estimates factored into this scenario.	1.31	Sea level rise projection for 2067 based on NOAA 2017 "High" curve and U.S. Army Corps sea level curve calculator for Apra Harbor tide gauge (local vertical land movement)	1.31
30 years SLR + OND Seasonal Extreme	SLR30_OND	0.63	Historically derived (1978-2003) maximum sea level estimate for 100-year recurrence at Saipan Harbor for months Oct.-Dec., with Typhoon-affected data removed.	0.74	Sea level rise projection for 2047 based on NOAA 2017 "High" curve and U.S. Army Corps sea level curve calculator for Apra Harbor tide gauge (local vertical land movement)	1.37
50 years SLR + OND Seasonal Extreme	SLR50_OND	0.63	Historically derived (1978-2003) maximum sea level estimate for 100-year recurrence at Saipan Harbor for months Oct.-Dec., with Typhoon-affected data removed.	1.31	Sea level rise projection for 2067 based on NOAA 2017 "High" curve and U.S. Army Corps sea level curve calculator for Apra Harbor tide gauge (local vertical land movement)	1.94
75 years SLR + OND Seasonal Extreme	SLR75_OND	0.63	Historically derived (1978-2003) maximum sea level estimate for 100-year recurrence at Saipan Harbor for months Oct.-Dec., with Typhoon-affected data removed.	2.14	Sea level rise projection for 2093 based on NOAA 2017 "High" curve and U.S. Army Corps sea level curve calculator for Apra Harbor tide gauge (local vertical land movement)	2.77
50 years SLR + OND Seasonal Typhoon Year	SLR50_ONDTY	1.85	Historically derived (1978-2003) maximum sea level for 100 year recurrence interval at Saipan Harbor, during the months of October - December including data from years with typhoon passage.	1.31	Sea level rise projection for 2067 based on NOAA 2017 "High" curve and U.S. Army Corps sea level curve calculator for Apra Harbor tide gauge (local vertical land movement)	3.16

* See Chowdhury, Md. R., Chu, P., Zhao, X., Schroeder, T.A., and Marra, J.J. (2010). Sea level extremes in the U.S.-Affiliated Pacific Islands—a coastal hazard scenario to aid in decision analyses. *Journal of Coastal Conservation*. 14:1, pp 53-62.

** See <http://corpsclimate.us/ccaceslcurves.cfm> (Revised 2017) and U.S. Army Corps of Engineers. (2011). *Sea Level Change Considerations for Civil Works Programs*. U.S. Army Corps Circular 1065-2-212. http://corpsclimate.us/docs/EC_1165-2-212%20-Final_10_Nov_2011.pdf

Greene, R. (2017) BECQ 2017 SLR Map Layer Updates: Methodology for Coastal Flood Geoprocessing.
 Figure 5: 2017 Saipan Coastal Flood Mapping Updates: Scenario Descriptions

Shoreline Erosion

Coastal erosion is a threat to the CNMI that is magnified when combined with the other existing threats especially typhoons and associated storm surge, and sea level rise. Coastal erosion threatens Saipan's public and private infrastructure, impacting businesses and residents alike. Shoreline erosion of Saipan's west coast beaches varies geographically, due to the hydrodynamic nature of the Saipan Lagoon. The Saipan Lagoon is "exposed to incident waves originating from the south through the north" due to its' orientation (USACE 2017). Notable shoreline erosion results from large waves generated by elevated water levels during a heavy storm event. DCRM's Shoreline Monitoring Program has identified areas vulnerable to erosion, such as the stretch from Micro Beach to Fiesta Hotel.

Beach Road, one of the main roads on the island connecting the two commercial hubs of Garapan and Susupe, is in close proximity to an eroding shoreline. Projections show that shoreline erosion threatens business, residential buildings, and recreational facilities found alongside Beach Road as the waterline edges closer to the road. Beach Road's erosion rate

increases the situated infrastructure's risk to coastal inundation and storm surge. Southern shorelines are also susceptible to shoreline erosion, such as the beach adjacent to Pacific Islands Club Resort and Aquarius Hotel. Property owners have expressed concerns over the loss of their property due to the receding shoreline and approached DCRM to permit for stabilization projects (USACE 2017).

Some parts of the shoreline have been hardened with grey shore protection measures in response to erosion. However, these hardening measures have contributed to a shift in wave dynamics, impacting shoreline surrounding the areas. For instance, the poor engineering of Sugar Dock contributed to the change of shoreline morphology in the nearby areas by shifting wave direction, causing sand accretion at its northern side. DCRM'S regulations acknowledge this consequence of grey shore protection measures and require that any shoreline hardening project must undergo a proper analysis of stabilization measures to encourage green protection measures. The islet of Mañagaha, a prime tourist destination, has experienced notable erosion on its eastern shoreline and accretion on its northwestern since 1996. Further erosion of the eastern coast will lead to tree fall, endangering nesting bird habitat and visitors. However, a stabilization study has found that this shifting shoreline resulted from the removal of World War II debris interacting with the hydrodynamics of the Saipan Lagoon. Natural stabilization may occur due to the lagoon hydrodynamics. However, the potential issue of increased sediment transport may call for intervention. Continued monitoring of Mañagaha's shorelines will inform coastal management on the state of Mañagaha's shorelines to protect tourism assets and natural resources.

Vulnerability assessments for Tinian and Rota indicate concern for the effects of coastal erosion, especially in Rota. Tinian's erosion vulnerability is high around the southwestern coast in areas such as the harbor and the stretch from Taga Beach to Tachogna beach, and is low elsewhere on the island, but an increase in erosion processes are due to SLR and increased storm intensity. Rota community members have expressed concern for both long- and short-term erosion, a prominent topic of community stakeholder discussion during vulnerability assessments. Anecdotal and visible evidence of shoreline change suggest erosion activity and continued vulnerability at multiple locations on Rota. Song-Song Village beaches and the northwest shoreline have experienced notable erosion over the past 55 years and are particularly vulnerable to wave action. The long-term consequences are the loss of the primary natural buffer between the ocean and existing property and infrastructure (BECQ-DCRM 2015b).

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
Climate Change	<ul style="list-style-type: none"> Adaptation plans SLR projections for Tinian and Rota Updated vulnerability assessments
Shoreline morphology	<ul style="list-style-type: none"> Gather shoreline-change data over larger interval; Identify and map littoral cells to inform management priorities; Develop comprehensive management plans for high priority areas; Identifying high tourist and economically valued shoreline; Identifying high ecologically valued shorelines; Identifying shoreline with high concentration of residential parcels
Protective capacity of reef systems	<ul style="list-style-type: none"> Lack of robust and easily implementable method for assessing coral reef resilience to inform marine spatial planning and support management strategy implementation; Impact of recent bleaching events on protective capacity of reefs in CNMI

In-Depth Management Characterization

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	CMP Provides Assistance to Locals that Employ	Significant Change Since the Last Assessment
Shorefront setbacks/no build areas	Y	Y	Y
Rolling easements	N	N	N
Repair/rebuilding restrictions	Y	Y	Y
Hard shoreline protection structure restrictions	Y	Y	Y
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	Y	Y	Y
Repair/replacement of shore protection structure restrictions	Y	Y	N
Inlet management	Y - Laolao Bay	Y	N

Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	Y – APC management standards, specifically wetlands and coral reef	Y	Y – Wetlands ¹⁶
Repetitive flood loss policies (e.g., relocation, buyouts)	N	N	N
Freeboard requirements	N	N	N
Real estate sales disclosure requirements	N	N	N
Restrictions on publicly funded infrastructure	N ¹⁷	N	N
Infrastructure protection (e.g., considering hazards in siting and design)	Y	Y – Coastal Hazards APC in Permitting and CRM Regulations	Y – Coastal Hazards APC

Significant Changes to Coastal Hazard Management Planning Programs or Initiatives

Management Category	Employed by State/Territory	CMP Provides Assistance to Locals that Employ	Significant Change Since the Last Assessment
Hazard mitigation plans	Y	N	-
Sea level rise/Great Lake level change or climate change adaptation plans	N ¹⁸	N	-
Statewide requirement for local post-disaster recovery planning	Y	N	Y- 2017 CNMI Catastrophic Typhoon Plan; A 2020 Resiliency Administrator position created to improve inter-agency coordination in post-disaster planning
Sediment management plans	N	N	-
Beach nourishment plans	N	N	-
Special Area Management Plans (that address hazards issues)	Y	Y	Y
Managed retreat plans	N	N	-

¹⁶ There is an existing mitigation hierarchy for corals, seagrass, and wetlands. There are also regulatory requirements for early development coordination in high risk flood zones

¹⁷ SSG Guidance and Matrix is being applied for supported projects

¹⁸ SLR is being considered for development on Saipan through SSG Guidance

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

Management Category	Employed by State/Territory	CMP Provides Assistance to Locals that Employ	Significant Change Since the Last Assessment
General hazards mapping or modeling	Y – C-CAP data	Y - DCRM GIS Specialist	Y
Sea level rise mapping or modeling	Y - BECQ 2017 SLR Map Layer Updates: Methodology for Coastal Flood Geoprocessing	Y	Y
Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)	Y - DCRM Shoreline Monitoring	Y	Y
Hazards education and outreach	Y	Y	Y – CZ Communications Team produced climate change and SLR videos to increase awareness amongst youth

- 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?

There have been no recent studies that illustrate the CNMI's effectiveness in coastal hazards management.

Identification of Priorities

- 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.

Management Priority 1: Floodplain risk mapping (FEMA coastal high hazard zones V & VE)

Further mapping needs to occur in order to identify high risk coastal hazard zones in the floodplain such as storm surge prone areas. This information can be used to update risk map scenarios for Saipan, Tinian, and Rota.

Management Priority 2: Incorporate existing coastal hazards research (SLR, etc.) into new and improved APC boundaries

Analyze existing shoreline research and synthesize into a single database identifying areas particularly vulnerable to coastal hazards. Incorporate these studies and identified coastal hazards areas into a new APC database, along with the updated FEMA flood risk mapping.

Management Priority 3: Identify and implement innovative ways to protect CNMI shorelines and shoreline infrastructure

Analyze existing shoreline research to identify innovative ways to either incentivize or regulate shoreline protection, for example through soft/living shorelines and limiting shoreline hardening. DCRM needs to identify gaps in management for research and collaborate with other agencies to improve shoreline stability and limit risk to existing and proposed infrastructure.

- 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?	Brief Explanation of Need/Gap
Research	Y	Updated maps of floodplain, analysis of existing shoreline research for higher priority areas and methods of shoreline stabilization
Mapping/GIS/modeling	Y	FIRM and LiDAR update; Social Vulnerability Assessment
Data and information management	Y	This will be obtained through research and long-term monitoring. The information will be used for decision making and planning to inform the boundary and setback update of the DCRM Coastal Hazards APC.
Training/Capacity building	Y	Increase DCRM staff technical capacity so that they may better understand coastal dynamics to ensure hybrid management actions are effectively implemented.
Decision-support tools	Y	These tools will support overall community resilience by providing data that will support long-term coastal hazards mitigation planning efforts.
Communication and outreach	Y	Effective means to disseminate information regarding coastal hazards that is easily translated into different languages

Enhancement Area Strategy Development

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

Yes X

No

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

Coastal hazards continue to be a top priority for the CNMI and DCRM specifically, in part due to the recent prevalence of extreme storm events directly impacting the CNMI. Coastal hazards have been a priority in the previous two Section 309 A&S reports, and a significant amount of research and data has been collected to identify vulnerabilities as a result. However, DCRM's APC boundaries have remained relatively unchanged since the the 1996 FEMA floodplain risk mapping and flood insurance study. DCRM will focus this 309 cycle on updating its Coastal Hazards APC boundaries, which will coincide with the FEMA FIRM update that was initiated in August 2020.

Strategy

Strategy 1: Wetlands APC Boundary Update

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 type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy and Government Facility Siting | <input checked="" type="checkbox"/> Wetlands |
| <input 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

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.

Strategy Goal:

The goal of the 2021-2025 Strategy 1: Wetlands APC Boundary Update is to revise and update the boundaries of DCRM's Wetlands Area of Particular Concern, informed by an updated wetland field assessment using delineation methodology based upon the recently adopted Rapid Assessment Methodology (RAM; 2016) and Stream Visual Assessment Protocol (SVAP; 2018) as well as other recently completed studies and datasets pertaining to the CNMI's wetlands.

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

Although wetlands were not selected as a priority enhancement area in the previous Section 309 (2016-2020) cycle, DCRM spent a considerable amount of time developing and reinforcing its wetlands policy through the development of technical and procedural reports. These reports supported critical updates to the agency's wetlands regulations, as described earlier in this report. In this upcoming Section 309 cycle, DCRM will synthesize these different reports using current methodology that will then be used to update the Wetlands APC and buffer zone boundaries. The agency currently specifies the methodology outlined in the 1987 USACE Wetland Delineation Manual and the 2012 Regional Supplement: Hawaii and Pacific Islands Region, its Rapid Assessment Methodology (RAM), and the supplemental Stream Visual Assessment Protocol (SVAP).

The strategy will focus on two objectives: (1) an extensive review and application of the field assessment and delineation protocol and material developed from technical and procedural reports developed in the previous cycle to utilize the established methodologies; and (2) building staff capacity at BECQ and partner agencies to encourage stronger interagency collaboration. To initiate the strategy, DCRM will contract the services of an expert in wetland ecosystems and field assessment protocols, specific to tropical environments similar to the CNMI, to review the delineation methodology and refine it with DCRM staff if necessary. The methodology shall also include a standardized system to incorporate buffer zones around the identified wetlands, utilizing a decision support tool that is scientifically justifiable, consistent, and transparently applied.

Once the methodology has been adequately assessed, the contractor will conduct training for BECQ staff, partner agencies, and private environmental consultants. The goals of these trainings will be to build capacity within BECQ and to disseminate the process to other stakeholders who may be affected by the newly delineated boundaries. Increased understanding of the delineation protocol will facilitate transparency and reduce conflict during the permitting and enforcement processes. In turn, this will help to address all three management priorities identified in Phase II Assessment which include delineating and valuating wetlands, mapping and updating the GIS database, and improving interagency collaboration for future management efforts.

The second phase of this strategy will be to apply the refined methodology to delineate wetlands on the islands of Saipan, Tinian, and Rota while opportunistically identifying sites on public land for future restoration efforts. DCRM will develop an inventory and prioritization of wetlands on Saipan, Tinian, and Rota based upon the recently completed Economic Valuation Study of CNMI Inland Wetlands (2019), development pressures, opportunities for restoration, and other factors. The agency will also develop an updated geodatabase with revised APC boundaries. An expert contractor will be used to begin delineation of the wetlands and buffer zones of the high priority wetlands complexes on Saipan, with assistance from DCRM staff in order to further train DCRM in field assessment skills. Over the course of this cycle, DCRM staff will continue applying the methodology for wetland delineation on the three islands until a full ground-truthed inventory of wetlands and buffer zones has been completed.

DCRM staff will develop a wetlands geodatabase that will be based on the data collected from field investigations. A version of this database will be made available to the public via the DCRM web portal. An updated Wetlands APC boundary will be finalized including the newly defined buffer zones, associated regulatory (APC) updates will be finalized and submitted to the CRM Board for approval, and subsequently to NOAA OCM for a CMP program change.

III. Needs and Gaps Addressed

As mentioned in the in-depth assessment, threats to wetland systems in the CNMI are attributed to development pressures, pollution, and invasive species. There is a critical need for better interagency coordination, a strengthened permitting process, and increased awareness on the ecosystem services that wetlands provide. Currently the Wetlands APC boundary is based upon several different datasets and ground truthing updates limited to public lands. Several key updates were enacted over the past five years as a response to the DCRM's attempt to develop a comprehensive wetlands strategy, but these changes have resulted in some confusion as they are applied to permitting and enforcement.

There has been some inconsistency between the Wetlands APC boundaries and associated regulations. For example, DCRM regulations state wetland buffer zones of a minimum of 50 feet, whereas the map, available on the DCRM Open Data Portal, shows a buffer of 100 feet. Ideally, the wetland map would reflect the maximum buffer area for a high-priority wetland system, but the 100-foot buffer reflects a compromised average. A comprehensive update to the wetland APC boundary is needed based upon current conditions and best available science.

In order to properly implement permit regulations and guidance, DCRM needs better defined APC boundaries through application of the RAM, field verification in accordance with the agency-specified USACE methodology, and a streamlined flow of information for permitting and enforcement of development activities in and around wetland areas. Additional stressors highlighted in the previous section revealed that wetlands face unprecedented development pressure from areas such as tourism and buildup of military exercises.

IV. Benefits to Coastal Management

This strategy will build off of the wetlands work developed under the prior Section 309 strategy and ongoing Section 306 planning and permitting tasks, and is a logical next step to enhancing DCRM's wetlands program. Upon completion of this strategy and associated program changes, DCRM will have a comprehensive and transparent wetlands regulatory program and staff who are trained in field assessment and valuation methodology.

V. Likelihood of Success

DCRM believes that the likelihood of success of this strategy is high. This strategy is building off of the momentum and focus of DCRM's wetlands program over previous award cycles and will require collaboration from partners and stakeholders. This strategy is supported by a budget that is sufficient for the process through contracting technical experts who can refine the wetland field assessment and delineation methodology and help increase the capacity of DCRM staff. This focus on in-house capacity building will allow DCRM to continue to implement this new wetland program moving forward.

VI. Strategy Work Plan

Strategy Goal: The goal of this strategy is to update DCRM's Wetlands APC boundary based upon the application of various methodologies outlined in the 1987 USACE Wetland Delineation Manual and the 2012 Regional Supplement: Hawaii and Pacific Islands Region, the RAM, the SVAP, and other wetland datasets and research completed in the CNMI.

This field assessment and delineation will also justify determining wetland buffer size and application. Once DCRM staff are trained in proper assessment and implementation of the methodologies, DCRM will lead the delineation of wetlands on Saipan, Tinian, and Rota and determine the new boundaries and buffer zones that will be used to update the current Wetlands APC boundaries. DCRM will update its wetlands regulations in order to ensure that they align with the delineation methodology, APC boundaries, and buffer zones. The goal of this strategy is to update the Wetlands APC and associated regulations in a way that is consistent and transparent, in order to eliminate confusion and reduce conflict over wetlands-related permitting and enforcement.

Total Years: 5

Total Budget: \$219,000

Year(s): 1: This will include review of current delineation methodology and development of a comprehensive, scientifically-based wetlands and buffer zones delineation methodology; staff training on methodology and application.

Description of activities: To begin this strategy, DCRM will hire an expert contractor to formalize a wetland and buffer zone Standard Operating Procedure (SOP) which shall include a review of the 1987 USACE Wetland Delineation Manual, the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaii and Pacific Islands Region, the RAM, and the SVAP. The purpose of this review is to inform the process that DCRM will follow to standardize the wetland APC and their corresponding buffer zones. Once this methodology is finalized, the contractor will conduct a training on the field assessment protocol and application of the methodology for DCRM staff in the Planning, Permitting, and Enforcement offices. Additional training sessions will also be offered to partner stakeholders including other government agencies and environmental consultants.

Major Milestone(s): This task will result in an SOP for wetland delineation activities in the CNMI; as well as training for DCRM, partner agencies, and other stakeholders.

Budget: The total budget for Year 1 under this strategy is \$57,000, including approximately \$15,000 to cover staff time and \$42,000 to cover contractor fees. The majority of Section 309 funds would be allocated for contractual expenses. Depending on the scope of the training, funds may need to be shifted from staff time to contractual in order to cover the full amount. The goals and objectives of capacity building and training tasks under the Program's approved Section 306 funding also align with this portion of the wetland strategy, and could help DCRM reach a broader training audience.

Year(s): 2: This will include field application of delineation methodology for high value wetlands on public lands, and prioritization of wetland systems in remaining years.

Description of activities: In the second year of this strategy, the selected contractor will lead initial delineation activities of wetlands on public lands in collaboration with DCRM staff. DCRM and its contractor will develop a method of prioritization to rank wetland systems in the CNMI. This prioritization ranking shall determine which sites, on public land, will require further analysis. The results produced from these investigations shall be used to identify potential sites for future wetland restoration activities.

Major Milestone(s): Within the second year of this strategy, DCRM will conduct an inventory of wetlands and develop a method to prioritize them on Saipan, Tinian, and Rota. This shall determine delineation activities that will occur in Years 3 and 4 of this strategy. By the end of the second year, DCRM will update the buffer zones of wetlands on public lands. Ultimately, DCRM will identify potential wetland restoration sites by updating wetland buffers.

Budget: Total budget for Year 2 under this strategy is \$59,000. A majority of the costs will be needed for the contractor to lead the application of the refined methodology, and for staff time and travel to Tinian and Rota to continue delineation efforts.

Year(s): 3-4: This will include field applications of the methodology, delineation of wetland boundaries and buffer zones medium and low priority wetlands.

Description of activities: DCRM staff will continue delineation activities of medium and low priority wetlands, identified in Year 2 of this strategy. Once delineation activities conclude, DCRM will update and adopt new regulatory language that incorporates the delineation and buffer zone methodology and enhanced wetland APC boundaries. As regulations undergo the review process by the CRM Board, DCRM staff will develop an interagency approach to update its comprehensive wetlands management plan. The management plan will be developed outside of 309 funding, as it is beyond the scope of the strategy, but will be largely informed by new data from 309 strategy activities.

Major Milestone(s): The major milestones of Years 3 and 4 consists of delineation of medium and low priority wetlands. Once these are completed, the wetlands APC boundary update and associated regulatory change shall be adopted by the CRM Board and approved by NOAA OCM.

Budget: Total budget for the activities under Year 3 (\$25,000) and Year 4 (\$30,000) is \$55,000. This staff time will also cover the finalization of the regulatory update and collaboration with the CRM Board to adopt the new program change, and personnel time allocated to the OCM program change process.

Year(s): 5: This will include updating new Wetlands APC boundaries and buffer zone database, updating language in regulations to reflect the change in boundaries and guidelines, and adopting a wetland program change.

Description of activities: In the last year of the 309 strategy, DCRM will incorporate the delineated wetlands and buffer zones into a geodatabase and publish the updated APC boundary. Existing web maps and apps on the DCRM Open Data Portal and the DCRM Public Permitting Application shall be updated to reflect this upon acceptance of the program change.

Major Milestone(s): In the final year of the strategy, the wetlands database will be completed and shall include all the data acquired from assessments, geospatial data associated with the official delineations and buffers, as well as pertinent information to permitting and enforcement. The final outcome shall be an update to the DCRM Permitting Application to reflect new, approved wetland delineations and buffer zones.

Budget: A total budget of \$48,000 will be needed in the final year of this strategy to cover staff time needed to finish delineation of any remaining wetlands on Saipan, Tinian, and Rota, and to incorporate the new delineation and buffer zone data in to a comprehensive wetland geodatabase and the BECQ Permitting App.

VII. Fiscal and Technical Needs

Fiscal Needs

Section 309 funding will be sufficient to cover all staff time and contractual technical expertise required under this strategy.

Technical Needs

DCRM is currently lacking the technical expertise in wetland ecology and delineation required for completion of this strategy; however, sufficient budget has been set aside for the contracting of wetlands technical experts to help develop the field assessment and delineation methodology and train DCRM staff in its application. Additional funding is set aside to allow this or another contractor to delineate one high-priority wetland system in partnership with DCRM staff, allowing for further capacity building and training.

VIII. Projects of Special Merit (Optional)

DCRM does not intend to apply for projects of special merit funding.

Strategy 2: Coastal Hazards APC Boundary Update

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 type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy and Government Facility Siting | <input 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

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.

Strategy Goal

The goal of the 2021-2025 Strategy 2: Coastal Hazards APC Boundary Update is to revise and update the boundaries of DCRM's Coastal Hazards Area of Particular Concern using new data, coastal hazard modeling, and inter-agency input. The strategy will be executed in parallel with the FEMA Risk Mapping and Assessment Program (Risk MAP), which will result in updated flood insurance rate maps (FIRMs) for the Commonwealth and enhance strategy outcomes. Under this strategy, DCRM will work closely with FEMA and its contractor to update the FIRM zones V & VE, and use these updates, along with any other mapping products resulting from the concurrent Risk MAP process or from NOAA, to update DCRM's Coastal Hazards APC. DCRM will incorporate data related to a range of coastal hazards such as sea level rise, shoreline erosion, and extreme storm events into this new,

customized Coastal Hazards APC. In addition to updated APC boundaries, DCRM will change its regulatory language regarding the Hazards APC to reference the new information and data sources used in the APC boundary update.

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

DCRM's current Coastal Hazards APC is defined by FEMA FIRM Zones 'V' and 'VE', which were last updated over two decades ago. In order to ensure floodplain and hazard maps (including DCRM's Hazards APC) reflect the best available data and modeling for CNMI, a request for FIRM updates through FEMA's Risk MAP was submitted in a prior CZM award cycle. DCRM has been identified as a key partner and state regulatory stakeholder to be involved in the multi-year Risk MAP process, and therefore can leverage the Risk MAP engagement as a springboard for this strategy. A project kickoff meeting and stakeholder workshop with FEMA and CNMI agencies, including DCRM Planning staff, was held in August 2020, and FEMA project leads indicated that the timeline aligns with the 2021-2025 Section 309 cycle.

In executing this strategy, DCRM will work closely with FEMA, NOAA OCM Science & Geospatial Division, and other CNMI stakeholders including OPD, DPW, and the CNMI Office of Homeland Security and Emergency Management (HSEM). The initial phase of the strategy is comprised of a data discovery, collection and validation process. This will be followed by compilation of data and hazards modeling results, development of a custom Hazards APC boundary, and adoption of the new coastal hazards area by the CRM Agency Board. DCRM's regulations will then be updated to reflect the new APC boundaries and definition, and official APC maps and Permitting App will be revised to incorporate the new data.

In the initial years of this strategy, staff time will be devoted to supporting and collaborating with the FEMA FIRM update process through regular meetings, workshops and data sharing as specified in the Risk MAP project lifecycle. In addition, DCRM will begin to analyze existing data pertaining to various coastal hazards (e.g. sea level rise, coastal flood exposure maps, shoreline monitoring data) that DCRM and NOAA have generated or collected during the previous two 309 cycles. DCRM will develop a data inventory and gap analysis in order to determine what information could be used to develop the new, customized Coastal Hazards APC, and what data is needed to fill critical gaps in the remaining years of the strategy.

Coinciding with the release of FEMA's preliminary versions of the FIRM reports to CNMI stakeholder agencies and anticipated completion of SLOSH modeling for the Marianas, DCRM will hire a contractor to process the coastal hazards data from the FIRM update, along with other coastal hazards analyses identified earlier in the strategy, into an updated APC boundary. DCRM will also create a geodatabase and spatial data web service to house the data for future reference, and publish to existing mapping tools. The result will be a customized Coastal Hazards APC map and database that incorporates updated information and data as it pertains to the multiple different coastal hazards that affect the CNMI.

DCRM will present proposed APC boundaries to stakeholders in tandem with FEMA's release of updated FIRMs for feedback, allowing for a comprehensive stakeholder review of

new coastal hazards products. Upon completion of stakeholder review, the identified APC boundary and accompanying regulations can be modified as necessary and presented to the CRM Agency Board for adoption, sent to OCM for a proposed program change, and integrated into updated web maps and the BECQ permitting application.

III. Needs and Gaps Addressed

At present, DCRM's Coastal Hazards APC is delineated by FEMA FIRM zones V & VE that were last updated in 1996. Prior 309 cycles (2011-2015, 2016-2020) have addressed Coastal Hazards primarily through the development of guidance documents intended to support a shift toward more climate resilient development and growth. However, DCRM's Coastal Hazards APC boundaries have not been updated to reflect the new data and studies on hazards and climate vulnerability information as they may affect the CNMI, specifically coastal storms and resulting storm surge, sea level rise, and coastal erosion. As described in the Phase 2 Assessment, the CNMI has significant vulnerabilities to these coastal hazards due to low-lying coastal infrastructure and a recent increase in extreme storm events; specifically, Typhoon Soudelor in 2015, Typhoon Mangkhut in 2018, and Super Typhoon Yutu in 2018. In addition, over the past five years the CNMI has seen a surge in coastal development, largely due to an increase in tourism from new emerging markets such as China. It is vital that DCRM is able to properly balance the development needs with coastal hazards mitigation and adaptation using the best and most up to date science and hazards projections..

IV. Benefits to Coastal Management

This strategy will improve DCRM's ability to help the CNMI adapt to the increasing threats from coastal hazards by ensuring DCRM's regulations are applied in the most appropriate areas, as determined by best available science and stakeholder input. In addition, by timing this effort to coincide with another broad, multi-agency hazards planning process, DCRM will enhance government coordination and communication, bringing together a comprehensive knowledge base and interests of multiple partner agencies. Once implemented, this strategy and the resulting program change will give DCRM more leverage to regulate development and other activities in areas of the coastal zone that are particularly vulnerable to coastal hazards, while further basing this oversight in the best available science and data.

V. Likelihood of Success

DCRM believes that this strategy has a high likelihood of success. The initial phases of the strategy will benefit from the parallel, complimentary planning process to update FEMA FIRM zones. Inter-agency discussions and community engagement around coastal hazards mapping and mitigation will be underway by the start of the Section 309 2021-2025 cycle, and preliminary FIRM results are expected around Year 3. By leveraging this process, DCRM will have a foundation of informed and engaged partners that can provide valuable input and data. In addition, DCRM believes that the adoption of the new Coastal Hazards APC boundaries and associated regulations will be met with minimal political resistance, especially given the recent storm activity in the CNMI. Basing the new APC boundaries on federally-funded data products and trusted hazards modeling will also strengthen the merit of the APC update, and provide quality assurance to the new boundaries.

VI. Strategy Work Plan

Strategy Goal: The goal of this strategy is to update DCRM's Coastal Hazards APC boundary based upon the newly developed FEMA FIRM zones V and VE, DCRMs existing coastal hazards data, NOAA OCM expertise and resources, and collaboration with other CNMI government agencies. These updated APC boundaries will also incorporate data and analysis from recent studies on other coastal hazards such as the impact of coastal storms and storm surge, sea level rise, and shoreline erosion. The program change will consist of updated hazard definitions in the regulations to reflect the new APC boundaries and the information used to delineate the special management area.

Total Years: 5

Total Budget: \$161,000

Year(s): 1-2: This will include regular coordination and participation between DCRM and the agencies involved in the FEMA Risk MAP and FIRM mapping update, as well as synthesis and gap analysis of current coastal hazards data.

Description of activities: In the first two years of the coastal hazards strategy DCRM will actively engage in consultations with FEMA, OPD, and other partners for the Risk MAP process. This includes assisting with data collection and development, engaging with local stakeholders, providing feedback, and participating in meetings as detailed in the Risk MAP project lifecycle. DCRM will also collate and analyze coastal hazards data from past research and analysis efforts. Previous efforts involved sea level rise models, vulnerability assessments, and damage analyses from extreme storm events. After these technical reports have been adequately assessed, DCRM will then develop a coastal hazards inventory and identify data needs and gaps to be addressed before inclusion into the updated APC boundary.

Major Milestone(s): Aside from active participation and coordination with other agencies in the FEMA mapping process, major milestones will include the completion of an internal DCRM coastal hazards data inventory and data gaps analysis.

Budget: Total budget for Year 1 (\$19,000) and Year 2 (\$17,000) of this strategy is \$36,000 used to cover staff time spent coordinating with partner agencies and Federal agencies (FEMA, NOAA, USACE) in Risk MAP process and internal DCRM data inventory.

Year(s): 3-4: This will include an update of the coastal hazards APC boundaries based on FIRM mapping results and other coastal hazards data analyses.

Description of activities: Throughout Years 3 and 4 of the coastal hazards strategy, DCRM staff will continue participation in the FEMA FIRM update process, which will include Consultation Coordination Officer Meeting and Public Open House meetings to solicit and provide feedback to the draft issuance. DCRM will also work with a contractor and NOAA OCM technical resources to take new V and VE FIRM Zones and combine them with other coastal hazards data. These datasets consist of sea level rise models, storm surge damage, and shoreline erosion rates, which will then inform the development of a new customized Coastal Hazards APC boundary.

Major Milestone(s): The primary outcome of these years will be a new coastal hazards APC boundary and geodatabase based upon updated and integrated data.

Budget: Total budget for Year 3 (\$51,000) and Year 4 (\$46,000) of this strategy is \$97,000. \$47,000 will be needed to cover staff time (\$21,000 and \$26,000 respectively) for the data analysis and update of the coastal hazards geodatabase. Approximately \$50,000 will be needed to fund an outside contractor to conduct most of the development of the new coastal hazards boundary and database.

Year(s): 5: This will include the finalization of a new Coastal Hazards APC boundary, the update to the language in regulations to reflect the change in boundaries and guidelines, and the adoption of the Coastal Hazards program change.

Description of activities: In the final year of the coastal hazards strategy, DCRM will work with its partners to finalize the Coastal Hazards APC boundary. All data produced from these activities will be housed and managed in a geodatabase which will be available on DCRM's servers. Once APC boundary has been formally accepted, DCRM will adopt the new boundary and develop associated regulatory language and present them to the CRM Board for adoption. Once adopted, it will be sent to NOAA OCM for program change approval.

Major Milestone(s): Major milestones in the final year of this strategy shall include a final Coastal Hazards APC boundary geodatabase and mapping products. These products will be made available on the DCRM Open Data portal for public use. The final product shall be the formal adoption of the Coastal Hazards APC boundary and associated regulatory language into regulations by the CRM Board, and finally approval by NOAA OCM.

Budget: A total budget of \$28,000 will be needed in the final year of this strategy to cover staff time needed to finalize the new Coastal Hazards APC boundary, incorporate the changes into DCRM regulations, and work with the CRM Board to adopt the new program change.

VII. Fiscal and Technical Needs

Fiscal Needs

Section 309 funding will be sufficient to cover all staff time and contractual technical expertise required under this strategy.

Technical Needs

DCRM will use funds from Section 309 to contract out the synthesis of the various coastal hazards data into a single customized APC boundary to supplement the technical expertise of DCRM staff.

VIII. Projects of Special Merit (Optional)

DCRM does not intend to apply for projects of special merit funding.

5-Year Budget Summary by Strategy

Strategy Title	Anticipated Funding Source	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Wetlands APC Boundary Update	309	\$ 57,000	\$ 59,000	\$ 25,000	\$ 30,000	\$ 48,000	\$ 219,000
Coastal Hazards APC Boundary Update	309	\$ 19,000	\$ 17,000	\$ 51,000	\$ 46,000	\$ 28,000	\$ 161,000
Total Funding		\$ 76,000	\$ 76,000	\$ 76,000	\$ 76,000	\$ 76,000	\$ 380,000

Summary of Stakeholder Engagement and Public Comment

Stakeholder Engagement

DCRM began reaching out to stakeholders in December 2019 to obtain feedback on challenges and opportunities for improvement regarding its priority enhancement areas. This was conducted through direct distribution of hard copy surveys and an online version posted to the DCRM website.

The surveys distributed were based on those used in the 2016-2020 cycle: a user-friendly document outlining the purpose, nine enhancement priority areas, and a questionnaire asking stakeholders to rank and explain the problems and opportunities with their selected top three enhancement areas. The surveys also offered an area for additional commentary, and requested the stakeholders' contact and identifying information.

Three interviews were conducted opportunistically by planning staff with key representatives for aquaculture, coastal hazards, and energy and government facility siting during the data gathering portion of Phase I. In total, seventeen stakeholders completed the questionnaire, ranging from agency representatives and NGOs. Representatives from the following agencies and key CNMI stakeholder groups who completed the survey include:

- Commonwealth Utilities Corporation (CUC)
- Division of Environmental Quality (DEQ) - Two (2) surveys
- Division of Fish and Wildlife (DFW)
- Historic Preservation Office (HPO)
- Hotel Association of the Northern Mariana Islands (HANMI)
- Koa Consulting, LLC
- Mariana Islands Nature Alliance (MINA) - Two (2) surveys
- Marianas Visitors Authority (MVA)
- National Oceanic and Atmospheric Administration-Office for Coastal Management (NOAA-OCM)
- National Park Service - American Memorial Park (NPS-AMP)
- Northern Marianas Housing Corporation (NMHC)
- Northern Marianas College -Aquaculture & Natural Resources (A&NR) Program at Cooperative Research, Extension, & Education Service (NMC- CREES)
- Office of the Mayor of Tinian and Aguigan
- Office of Planning & Development (OPD)
- Office of the Mayor of Saipan (MOS)

To supplement the surveys, DCRM planned a stakeholder engagement meeting on February 6th, 2020. Invites were sent out to contacts from key agencies with a month's notice, posted on DCRM's social media outlet by the Outreach Team, and followed up with invitees through emails and requests for participation leading up to the scheduled meeting. However, no stakeholders responded with an RSVP for the engagement meeting. The meeting was subsequently cancelled, and data for stakeholder input is based upon individual survey responses and interviews.

Priority Rankings

Each respondent was asked to select their top three priority enhancement areas and rank them with a 1 through 3. Most stakeholders included Wetlands and Coastal Hazards among their top three, with Wetlands being listed by ten stakeholders and Coastal Hazards being listed by nine. Public Access, Marine Debris, Cumulative and Secondary Impacts, and Ocean Resources were each listed by about a third of the stakeholders (5-6 responses each). The total count for each enhancement area is depicted in the table below:

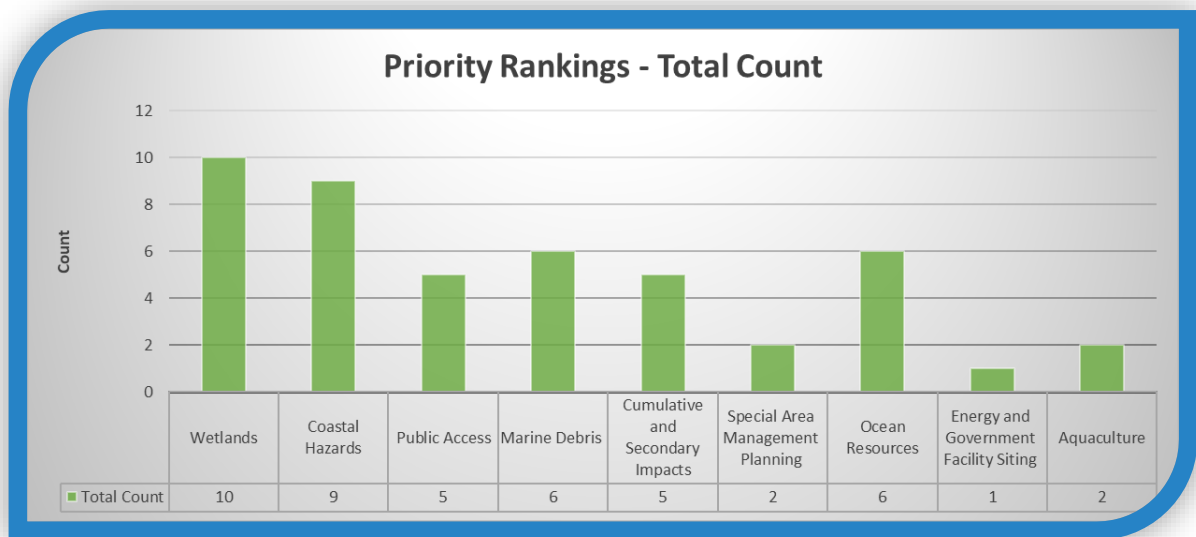


Figure 6: DCRM 309 Stakeholder Survey results.

In order to better analyze and rank the responses, the rankings were weighted according to the following point system: a ranking of 1 = 3 points, 2 = 2 points, and 3 = 1 point. This weighted ranking placed heavier emphasis on enhancement areas that might have been listed by fewer responses but were given higher priority. This weighted ranking system further emphasized the heavy prioritization that stakeholders placed on Wetlands and Coastal Hazards with a score of 29 and 21 respectively. Stakeholders also placed heavier emphasis on Marine Debris (12), Cumulative and Secondary Impacts (10), and Public Access (9), with less emphasis placed on Ocean resources (7).

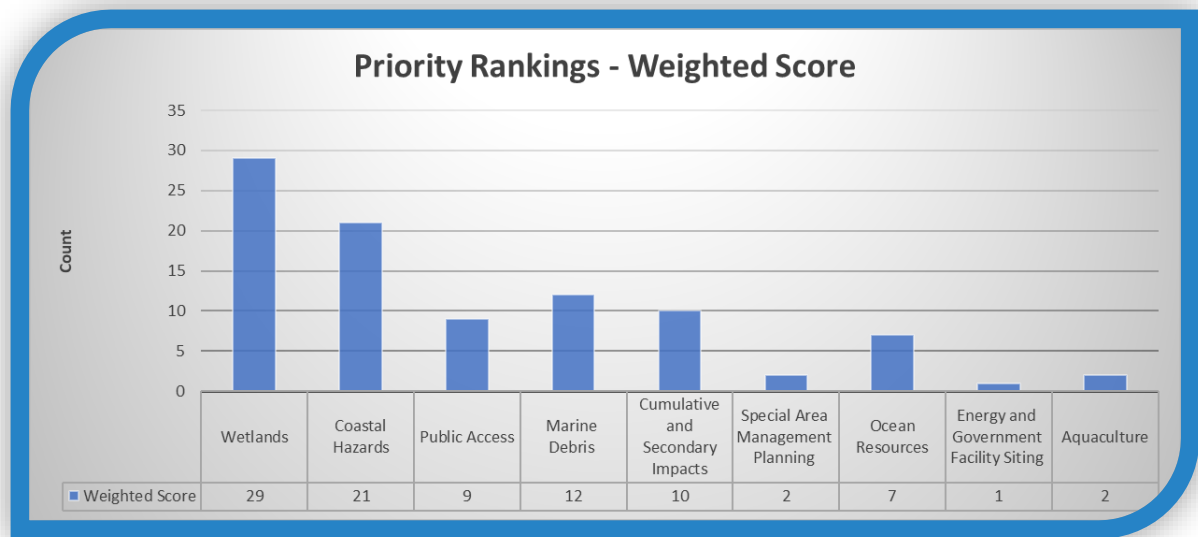


Figure 7: DCRM 309 Stakeholder Survey weighted score.

Comments on Challenges and Opportunities

Along with ranking the top three of nine enhancement areas that stakeholders believed to take precedence, respondents were also asked to provide insight on the challenges and opportunities that DCRM would encounter in managing these selected enhancement areas. Some of the responses are provided as follows to provide a representative selection of the answers provided by respondents. As many of these comments addressed challenges that overlapped priority areas, these areas are noted in parentheses. Grammar and spelling were not changed, but are indicated to maintain the authenticity of the responses.

1) *What do you feel are the greatest problems regarding those priority enhancement areas?*

Similar overlapping themes are discussed in these problem areas particularly with challenges in development, tourism impacts, disturbances from climate change, lack of updated data and public awareness, implementation, enforcement, and politics. The main consensus seems to be that development has heavily impacted the coastal zone, resulting in degradation to priority areas such as wetlands, special area management planning, and ocean resources; and exacerbating other issues such as marine debris, public access, coastal hazards, and cumulative and secondary impacts. Development has also paved the way for unsustainable and unrestrained tourism impacts. Climate hazards will continue to be an ongoing issue, and the slew of threats that follow will contribute to the cumulative and secondary impacts from other issues. Lack of up-to-date data and lack of public understanding create a difficult dynamic to conduct and execute accurate planning. The politics for management are closely connected to other issues such as enforcement and continued implementation, and are often counterintuitive to management and regulations for the constituents and the resources they serve.

Wetlands	
1	Encroachment by development. Political and business community leaders that don't push for protection.
2	<ul style="list-style-type: none"> Numerous agencies responsible for management / regulation but little alignment of management efforts; inconsistent application of and lack of funding for land exchange program that aims to protect and maintain high value wetlands; Very old and outdated management strategy (from 1991) and limited connection between management policies and development trends; No viable wetland plants seed bank to support restoration / enhancement projects; Lack of public awareness regarding wetlands (what they are, how they function, why their ecosystem benefits are important); Lack of documentation on mitigation options and what type of mitigation works / is appropriate in CNMI (ACE records also an issue here); Changing ACE responsibilities under the Clean Water Rule updates; Current lack of incentives to improve existing wetland systems.
3	The "cart before the horse" approach taken by CNMI permitting, where projects, activities, and locations are already decided before consulting with agencies, thus allowing only for mitigation and not avoidance.
4	Increased development and watershed degradation
5	Wetlands are home to diverse populations of organism[s]. It serves as [a] "sink" for water from higher areas on land. With rapid development as a result of a robust economy, wetlands can be at risk from non-point pollution sources as well as habitat loss upland that may very well threaten the diversity below.
6	I do not think that the public has a comprehensive understanding of the importance of wetlands, the role they play in keeping our waters and island safe and clean, and the need to protect them. In addition, we have developed areas that naturally should be wetlands and we are struggling to deal with the water that once would have been taken care of naturally through wetlands and the services they provide.
7	Loss of wetland habitat greatly exceeds gain or protection. Wetlands are not being protected and managed for buffer of sea level rise and flooding impacts.*
8	Degradation of wetlands due to overdevelopment.*

Coastal Hazards	
1	Building and infrastructure too close to shoreline.
2	Insufficient preparedness for typhoons and climate change impacts.*
3	Coastal hazards on Tinian include typhoons, disturbances, and storm surges that alter the dynamics of the sandy shores. The sandy shores respond to these climatic changes and in turn results in erosion and storm tide inundation which threaten the coastal settlements and infrastructure along the coasts of our beach. An example of this is after Super Typhoon Yutu, Tachogna beach on Tinian had huge rocks in places where it wasn't present before. The sand was swept away from the damaging waves which resulted in a deeper shore line. Imagine what it will do to our sandy shores many years from now as climate changes continue.*

Public Access	
1	Damaging visitor uses continue to degrade shoreline sites
2	Rules and regulations [are] not being followed that would damage our coastal lines and ocean life.
3	Public access enhancements and policies that mitigate tourist impacts are needed
4	A lack of proper litter control facilities; public [sic] driving on beaches; lack of adequate restroom facilities, insufficient capacity for enforcement of existing rules and regulations.*

Marine Debris	
1	A lack of proper litter control facilities; public [sic] driving on beaches; lack of adequate restroom facilities, insufficient capacity for enforcement of existing rules and regulations.*
2	Marine debris poses a major hazard to marine organisms, they are unsightly, and they take forever to decompose, if not at all. As a territory that relies on tourism as its number one industry, marine debris compromises the sustainability of the CNMI's main economic driver.
3	Marine debris is an issue in all of our beach[es] due to Super Typhoon Yutu. Post-typhoon, the assessment team reported numerous tin, lumber, plastic, trash, and metal in the ocean/beach due [to] the construction sites that were damaged (located near the beach). Recovery teams were only able to remove and extract a couple of the marine debris in the ocean due to the depth and weight of the debris. Marine debris not only poses a risk to the safety of our people who go swimming and diving, but more importantly, it is a hazard to the creatures that inhabit the ocean and call it their home. It damages their natural habitat and disrupts their way of life.
4	The unending and overwhelming amount of marine debris. Can we meaningfully manage the problem?
5	Marine debris is a global problem that ends up on our beaches. It is a very hard issue to address. While we can implement campaigns on island, and are doing a very good job, we are only a very small part of a huge problem that needs to be addressed world-wide.

Cumulative and Secondary Impacts	
1	Loss of wetland habitat greatly exceeds gain or protection. Wetlands are not being protected and managed for buffer of sea level rise and flooding impacts.*
2	Degradation of wetlands due to overdevelopment.*
3	Insufficient preparedness for typhoons and climate change impacts.*
4	Coastal hazards on Tinian include typhoons, disturbances, and storm surges that alter the dynamics of the sandy shores. The sandy shores respond to these climatic changes and in turn results in erosion and storm tide inundation which threaten the coastal settlements and infrastructure along the coasts of our beach. An example of this is after Super Typhoon Yutu, Tachogna beach on Tinian had huge rocks in places where it wasn't present before. The sand was swept away from the damaging waves which resulted in a deeper shore line. Imagine what it will do to our sandy shores many years from now as climate changes continue.*
5	No oversight on tourism, unrestrained development, runoff from land clearing and unpaved/unmaintained roads.
6	Impacts from tourism on high use sites are excessive. Marine sports operators are damaging coastal resources.
7	<ul style="list-style-type: none"> Lack of understanding (in general and specific to project proponents / Agency Board) regarding how to do effects analysis for cumulative and secondary impacts and how to propose and implement appropriate mitigation;

	<ul style="list-style-type: none"> • Segmentation/phasing of projects allows for skewed analysis of impacts (if any); • Lack of guidance on and inconsistent application of impact identification and avoidance procedures; • Lack of mechanism(s) to identify impacts early in project scoping process and internalize externalities of project impacts; • Need for mainstreaming of Safe, Smart Growth principles across agencies to ensure projects are consistent with sustainable growth objectives and are avoiding maladaptive [sic] impacts to the greatest extent possible.
8	Land cover conversion from development continues to reduce habitat and quality of life for coastal stakeholders.
9	Comprehensive impact assessments, criteria on what constitutes an economically viable and environmentally responsible coastal development project.
10	Public access enhancements and policies that mitigate tourist impacts are needed

Special Area Management Planning

1	Lack of a comprehensive development and resources protection plan, dictating what can be done where, and what resources will be protected and cannot be disturbed.
2	No "hard limits" on resources/areas/activities that should not be disturbed or allowed. For example, BSI/IPI jetskis in northern lagoon, or allowing encroachment/ destruction/ development of wetlands for SGIG project in San Roque.
3	Lack of enforcement, not always good reasons behind management decisions.

Ocean Resources

1	We are losing our coral reefs at alarming rates due to high temperature and excessive nutrient and sediment pollution.
2	As a result of the exploitation of ocean resources, marine vertebrate and invertebrate populations have declined significantly especially in Saipan, a major population center, in the CNMI. Fishermen have reported, through surveys and observations at road side fish stalls, declining catches and smaller sized fish.
3	The ocean resources in our island are not thoroughly protected and enforced. Over the years, I have witnessed people over-fishing and abusing their fishing privileges. Often times, I see people catch really small fish and crustaceans. People also remove coral and sea shells from the ocean for their use. Only some areas on the island are protected, but even with protection of our ocean resources, it lacks enforcement.

Energy and Government Facility Siting

1	Similar to cumulative / secondary impacts outlined above. Highlights needs for comprehensive resource-specific plans that may span various agency mandates and involve public/private sector involvement / partnerships. DPL has id'd areas for renewable energy deployment in 2019 PLUP update - opportunity to work with CUC on developing long-term power / water / sewer solutions that would be supported by bringing on more dedicated technical staff / capacity.
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Aquaculture	
1	Coral restoration, as an emerging form of aquaculture, is not yet integrated into CZ regulatory framework.

**Comment categorized under multiple priority enhancement areas.*

2) What are the greatest opportunities DCRM has for enhancing these enhancement areas?

There were several common themes and ideas among stakeholders in response to improving enhancement areas. A very strong emphasis on closer coordination and collaboration between agencies and community partners was highlighted, as well as incentivizing positive behavior and cohesive planning efforts with stakeholders through public involvement. This in turn could result in more fruitful efforts through strengthening management, staying updated on newly emerging data, and accomplishing planning objectives. Implementation is critical to supplementing planning, and following through with enforcement on stricter rules and regulations has been a common theme that emerged in both the challenges and the opportunities. Addressing the root of the problem could be a strong preventive measure for cumulative and secondary impacts, and addressing one priority area would provide opportunities to improving the quality of multiple coastal resources based upon their interconnectedness. For example, the suggestions of banning plastics in the CNMI would address the problem of marine debris on a local level and result in less cumulative and secondary impacts to other priority areas such as ocean resources and wetlands.

Wetlands	
1	<ul style="list-style-type: none"> • Work with DEQ, DLNR, DPL, OPD to update comprehensive wetland management plan (NRCS / ACE / NOAA / NFWF may also have some resources to support this); • Develop additional mitigation guidance; incentivize active management of sub-prime wetlands (as well as high quality) AND THEIR BUFFERS to improve functions - private landowners are hungry for incentives and public land owner / manager would benefit from funding / expanded capacity to manage these resources on public lands so perhaps numerous opportunities here?
2	Increase education and outreach of the importance of wetlands.
3	Revising the Major Siting Permit program to involve DPL, zoning, and more foresight and planning, so that consultation happens before land lease is secured and 65/90/100% designs are completed.
4	Rehabilitate existing wetlands, control litter and non-point source pollution from entering the water flow; plant native species trees and ground vegetation; increase surveillance and enforcement of environmental violations by commercial establishments.
5	If it has been a while, perhaps, conduct another round of wetland assessment throughout the CNMI and see where we are at versus where we were from the last assessment. Assessment activities can be; water quality tests, satellite photo comparisons of then and now, biodiversity surveys of the area, etc. Develop an action plan from findings.
6	Continuing to push for stronger wetland protection rules and regulations, with enforcement.
7	Hopefully using mitigation to stop major erosion.*
8	Habitat restoration and promotion of public access and use of wetland areas.*

Coastal Hazards	
1	Enforcement in coordination with other departments that approve building in areas close to these wetlands.
2	Outreach and proper planning for large developments [sic].
3	Public and stakeholder involvement.
4	Climate change adaption [sic].
5	Bringing CRM's experience to the table in interagency working groups. Pushing other agencies to address the coastal hazards issue in a pro-active, ecologically-sensible manner.

Public Access	
1	Habitat restoration and promotion of public access and use of wetland areas.*
2	Education of the public to ensure that safety and awareness of our precious oceans
3	Restrict vehicle access; establish sufficient parking/ pathways to picnic areas; install dry compost restroom facilities with solar power.
4	Setting limits on use of sensitive marine sites and promoting proper infrastructure that can support tourism in an environmentally sustainable way.*

Marine Debris	
1	Continuing beach cleanups. Pushing for single-use plastic restrictions.
2	Partnership
3	Support of or be the initiator of CNMI public law or regulations that addresses the problem of marine debris, i.e., ban on single use plastics. Start or continue public education on the effects of the marine debris problem and what can be done to address the problem.
4	Construct a proper run off area that would not affect our reef and marine life. Implement proper disposals and eco-friendly materials that will not destroy the marine life. Ban use of plastic materials use in the CNMI.*
5	Increase enforcement, support bans on single use plastic (bags, bottles, containers).*

Cumulative and Secondary Impacts	
1	Hopefully using mitigation to stop major erosion.*
2	Construct a proper run off area that would not affect our reef and marine life. Implement proper disposals and eco-friendly materials that will not destroy the marine life. Ban use of plastic materials use in the CNMI.*
3	Major siting training could be expanded to include guidance specific to cumulative impacts; consider establishing a certification program for consultants / contractors with emphasis on early engagement to support impact identification and avoidance.
4	Lobby for a legislative moratorium on future coastal development.
5	Implementation of multi-agency conservation areas, standard mitigation trees, and overall development plans.
6	Promoting watershed management control of nutrient and sediment pollution.*

Special Area Management Planning	
1	More administration and community buy-in supporting firm interpretation and enforcement of regulations, policies, and rules.

Ocean Resources	
1	Setting limits on use of sensitive marine sites and promoting proper infrastructure that can support tourism in an environmentally sustainable way.*
2	Construct a proper run off area that would not affect our reef and marine life. Implement proper disposals and eco-friendly materials that will not destroy the marine life. Ban use of plastic materials use in the CNMI.*
3	I also believe that in order to plan and manage resource, we always need to get the community involved in making policies and control. The Ocean is the largest resource for our community, preserving and managing proper fisheries will lead to the abundance of ocean resource.
4	Scientific surveys.
5	Work collaboratively with the likes of DFW and NMC CREES A&NR and other resource management agencies and NGO's to look into and develop action plans how to better manage our ocean resources cooperatively through resource development, public education and regulations. Aquaculture, for example, through responsible ocean farming, can alleviate pressure on wild stock by supplying that fish needs and demands of the local population. DFW can place a catch moratorium on certain fishes that are deemed threatened.*
6	Promoting watershed management control of nutrient and sediment pollution.*
7	Increase enforcement, support bans on single use plastic (bags, bottles, containers).*

Aquaculture	
1	Work collaboratively with the likes of DFW and NMC CREES A&NR and other resource management agencies and NGO's to look into and develop action plans how to better manage our ocean resources cooperatively through resource development, public education and regulations. Aquaculture, for example, through responsible ocean farming, can alleviate pressure on wild stock by supplying that fish needs and demands of the local population. DFW can place a catch moratorium on certain fishes that are deemed threatened.*
2	To be more proactive in educating and working with the community on sanctuary areas.

Energy and Government Facility Siting	
1	Development standards for new facilities could be created with CUC and incorporated into scoping guidance?

**Comment categorized under multiple priority enhancement areas.*

Public Participation

Public comments on the draft 2021-2025 Section 309 Assessment and Strategy Report were solicited from June 17, 2020 through July 31, 2020. A version of the draft was hosted on the DCRM website and public notices were advertised in both local newspapers, by email, and on DCRM's social media pages. Additionally, DCRM emailed the draft to all participants of the online survey. Comments on the draft document were received from one local government agency, the CNMI Office of Planning and Development. DCRM also incorporated feedback from two reviewers from NOAA OCM. The comments received on the document have been incorporated into the final version of this document.

The comments from OPD were thorough and recommended that DCRM consider expanding its wetlands strategy to include an update for the comprehensive wetlands management plan for the CNMI. DCRM considered this strategy but opted to proceed with the original strategy and address the update to the comprehensive wetlands management plan under a different task within its' annual cooperative agreement. Comments on DCRM's second strategy regarding coastal hazards were generally supportive but requested that the agency provide further background on the importance of this task. Overall, the theme of the comments recommended that DCRM add further clarification upon certain subjects and clearly define the strategy the agency will take to update the wetland boundaries in CNMI.

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