

The Commonwealth of the Northern Mariana Islands

Final Watershed Plan

APPENDIX A

Stakeholder Engagement Summary

July 2022



**US Army Corps
of Engineers**®
Honolulu District



Introduction

Stakeholder engagement was a crucial piece in the development of the Commonwealth of the Northern Mariana Islands (CNMI) watershed assessment study. Recurring meetings with both local and Federal agencies over the course of the study duration created and maintained support for the project and provided an opportunity for the U.S. Army Corps of Engineers (USACE) project team to receive feedback and input from CNMI experts.

Due to the COVID-19 pandemic and geographic limitations, travel was restricted and stakeholder meetings were conducted virtually, rather than in-person. Utilizing a virtual meeting platform, the USACE project team successfully developed a series of interactive meetings to facilitate productive discussion amongst the meetings' participants.

This appendix documents the summary of each of the stakeholder meetings that occurred as part of the CNMI watershed assessment, which includes the following information: meeting date, purpose, agencies in attendance, key discussion points, and notes with attendee interactive feedback (when applicable). Table 1 provides an overview of the meetings, which are broken out into stakeholder meetings specifically focused on the development of the watershed assessment scope and content, or stakeholder meetings specifically focused on other Federal agency involvement in water and power long-term recovery efforts throughout CNMI.

Table 1. Overview of Stakeholder Engagement Meetings

Meeting Type	Date	Focus
Stakeholder Meeting #1	Jul 2020	Overview on project purpose and scope overview, team introductions, problem and opportunity identification.
Stakeholder Meeting #2	Dec 2020	Receive input on problems and opportunities.
Stakeholder Meeting #3	March 2021	Refine and validate problems and opportunities, group Q&A.
Stakeholder Meeting (Water & Power) #4	May 2021	Overview on project purpose and hear from attendees on current or planned efforts focused on long-term recovery for power and water resources.
Stakeholder Meeting (Water & Power) #5	June 2021	Discuss measures that would be beneficial in addressing the identified problems.
Stakeholder Meeting (Water & Power) #6	July 2021	Receive risk-based prioritization and uncertainty on problem categories and stressors.
Stakeholder Meeting #7	Aug 2021	Two-day focus meeting to receive input on risk-based prioritization and uncertainty on problem categories and stressors.
Stakeholder Meeting #8	Sep 2021	Two-day focus meeting to receive input on risk-based prioritization and draft recommendations.
Stakeholder Meeting (Water & Power) #9	Nov 2021	Review comments received on the Recommendations Milestone Report Summary.
Stakeholder Meeting #10	Dec 2021	Review draft report content and comments received from document review
Stakeholder Meeting (Site Visit) #11	March 2022	Site visit to see study area and meet in-person with study partners and stakeholders.
Stakeholder Meeting (Site Visit) #12	March 2022	Site visit to see study area and meet in-person with study partners and stakeholders.



Meeting Type	Date	Focus
Stakeholder Meeting (Site Visit) #13	March 2022	Site visit to see study area and meet in-person with study partners and stakeholders.
Stakeholder Meeting (Site Visit) #14	March 2022	Site visit to see study area and meet in-person with study partners and stakeholders.
Stakeholder Meeting (Site Visit) #15	March 2022	Site visit to see study area and meet in-person with study partners and stakeholders.
Stakeholder Meeting (Site Visit) #16	March 2022	Site visit to see study area and meet in-person with study partners and stakeholders.

Stakeholder Meeting #1

Date and Location: July 9, 2020, virtual

Purpose: Served as the kick-off meeting to provide an overview of the project purpose and scope, introduce the team, discuss the planning process, and receive input from stakeholders on watershed issues throughout Saipan, Tinian, and Rota.

Agency Attendance:

- CNMI Office of Planning and Development (CNMI-OPD)
- CNMI Division of Coastal Resources Management (CNMI-DCRM)
- USACE
- Koa Consulting
- National Oceanic and Atmospheric Administration (NOAA)

Discussion Summary:

- USACE watershed planning process looks at a broad array of resource needs and takes a systems approach to evaluate interrelationships among land and water resources. It'll produce a strategic roadmap to inform future decisions leveraging both Federal and non-Federal resources.
- Scope refinement:
 - Significant issues in Saipan include storm water management, water quality, coral degradation, flooding, and invasive species.
 - Significant issues in Tinian include drought, fire, water management.
 - Significant issues in Rota include fire, storm surge, water supply, and flooding.
- CNMI agencies provided a number of resources to help USACE better understand these issues.

Stakeholder Meeting #2

Date and Location: December 3, 2020, virtual

Purpose: To prepare for the upcoming Shared Vision Milestone meeting by reviewing the identified problems and study needs.

Agency Attendance:

- USACE
- CNMI-OPD



- CNMI-DCRM
- Koa Consulting
- NOAA

Discussion Summary:

- Focused area of the watershed assessment will be the islands of Saipan, Tinian, and Rota because they are the most populous.
- Recommendations presented are conceptual and for planning purposes, not to lead directly into design and construction (can help inform future work).
- The problems identified occur to some degree on all three islands, so will apply to all.
 - Frequent intense rainfall events trigger flooding: Rota doesn't have as many low-lying areas but does experience flood related infrastructure impacts. (common in Songsong village).
 - Storm and high wave events: Tinian Port has experienced damage from past storms.
 - Over pumping and high saline concentrations: There are watershed management plants with the Environmental Protection Agency (EPA) and Commonwealth Utilities Corporation (CUC) available. Increase in over pumping and saltwater intrusion are limiting water resources.
 - Commercial harbor issues threatening the local economy: The small marina on Saipan used by commercial marine tour operators is failing and disrupting business operations.
 - Wildfires: Accidental wildfires are common along with intentional burning for deer hunting.
- Received feedback on the draft Shared Vision Statement.
- CNMI agencies provided a number of resources to help USACE better understand these issues.
- USACE looking to utilize LifeSim tool to estimate life loss and economic damages resulting from a hazard.

Stakeholder Meeting #3

Date and Location: March 16, 2021, virtual

Purpose: To walk through a series of questions the USACE team compiled and receive input from the stakeholders on a variety of topics.

Agency Attendance:

- USACE
- CNMI-OPD
- CNMI-DCRM
- NOAA
- CNMI Department of Environmental Quality (CNMI-DEQ)
- Horsley Witten
- CNMI Bureau of Environmental and Coastal Quality (CNMI-BECQ)
- CNMI Department of Agriculture (CNMI-DOA)
- CNMI CUC



- CNMI Department of Homeland Security and Emergency Management (CNMI-DHSEM)

Discussion Summary:

- The group provided input on questions that covered the following topic areas: environmental resources, cultural resources, plan formulation, hydrology and hydraulics, and economics.

Stakeholder Meeting (Water & Power) #4

Date and Location: May 13, 2021, virtual

Purpose: To meet with other Federal agencies who are currently involved in long-term resiliency efforts throughout CNMI, specifically focused on strengthening water and power resources.

Agency Attendance:

- USACE
- Federal Emergency Management Agency (FEMA)
- U.S. Geological Survey (USGS)
- U.S. Department of Housing and Urban Development (HUD)
- Federal Housing Administration (FHA)
- EPA
- Pacific Coast Research and Planning (PCRP)

Discussion Summary:

- Meeting attendees provided updates on planned or ongoing efforts their respective agencies are working on. A recurring topic was the lack of manpower and capacity building to utilize available funding.
- CNMI has received millions of dollars in recovery and resiliency funding that could be allocated to water infrastructure projects, but an increase in staff is needed to prioritize and implement. EPA potentially could provide assistance to other agencies to help with capacity building.
- Agencies provided a number of funding resources that could be utilized for the watershed assessment implementation plan.

Stakeholder Meeting (Water & Power) #5

Date and Location: June 10, 2021, virtual

Purpose: To meet with other Federal agencies who are currently involved in long-term resiliency efforts throughout CNMI, specifically focused on strengthening water and power resources.

Agency Attendance:

- USACE
- NOAA
- FEMA
- USGS
- HUD
- FHA



- EPA
- U.S. Bureau of Reclamation (USBR)

Discussion Summary:

- The group discussed the Guidance Manual for Smart, Safe Growth – its development and content (strategies, principles, and implementation/integration).
- FEMA provided update that American Rescue Plan Act funds are now available.
- An interactive exercise was done with the group to discuss and receive feedback on possible measures that could be included to help address the following problem areas:
 - Water supply:
 - CUC is conducting an audit to figure out the sources of water loss (theft, leaks, etc.).
 - There is a data gap and more modeling is needed to further the understanding of this issue. CNMI-BECQ has been doing quite a lot of work on this.
 - Pumping restrictions could be a beneficial measure to include.
 - EPA is working on fixing the water distribution system – pipe replacement.
 - Wetlands and their relationship with water supply could be a beneficial measure to include.
 - Groundwater management and protection plans are critical.
 - Water quality:
 - Partnership between the Natural Resources Conservation Service and CNMI-BECQ will assess impacts of livestock and steps to address.
 - Several agencies are going through environmental compliance and making updates as needed.
 - Storm surge and flooding:
 - Strengthening policy to reduce flood risks.
 - CNMI currently doesn't have a tsunami warning system and could be a beneficial measure to include.

Stakeholder Meeting (Water & Power) #6

Date and Location: July 8, 2021, virtual

Purpose: To receive input on risk-based prioritization and uncertainty associated with the problem categories and stressors.

Agency Attendance:

- USACE
- FEMA
- EPA
- USBR
- Federal Highway Administration

Discussion Summary:

- USACE developed an interactive slide deck to receive direct input on risks associated with each of the problem focus areas and types of measures that would be beneficial.



Examples of these slides are provided below. To see the full annotated slide deck, see Attachment 3 at the end of this appendix.

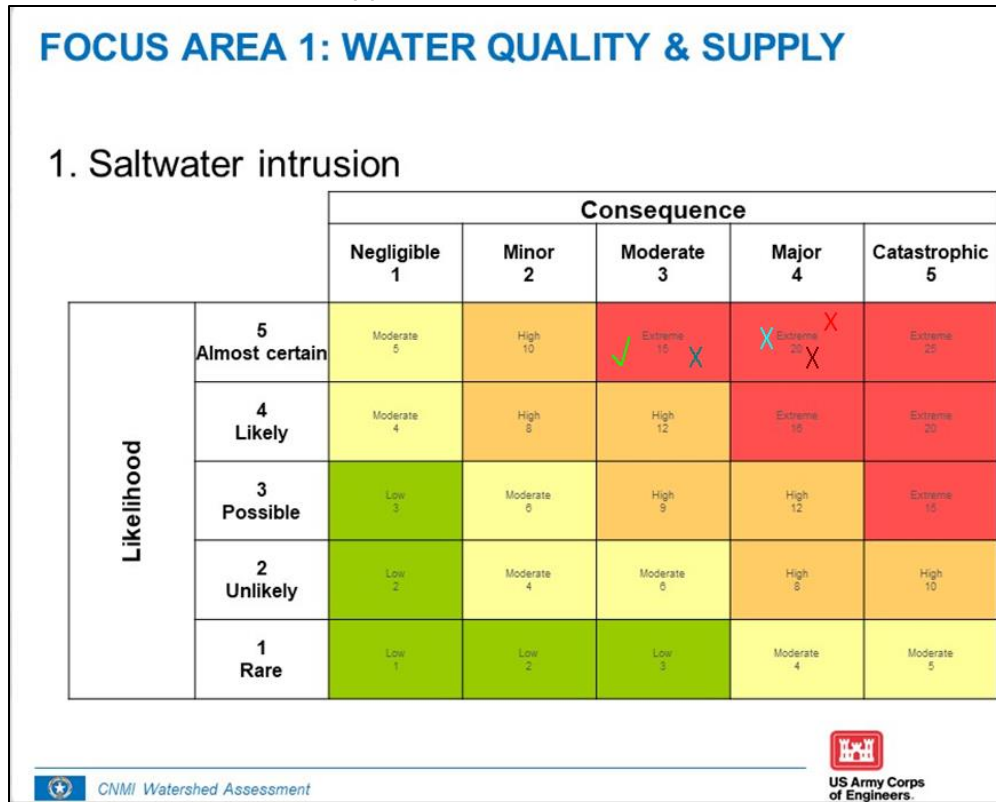


Figure 1. Saltwater Intrusion Preliminary Risk Assessment



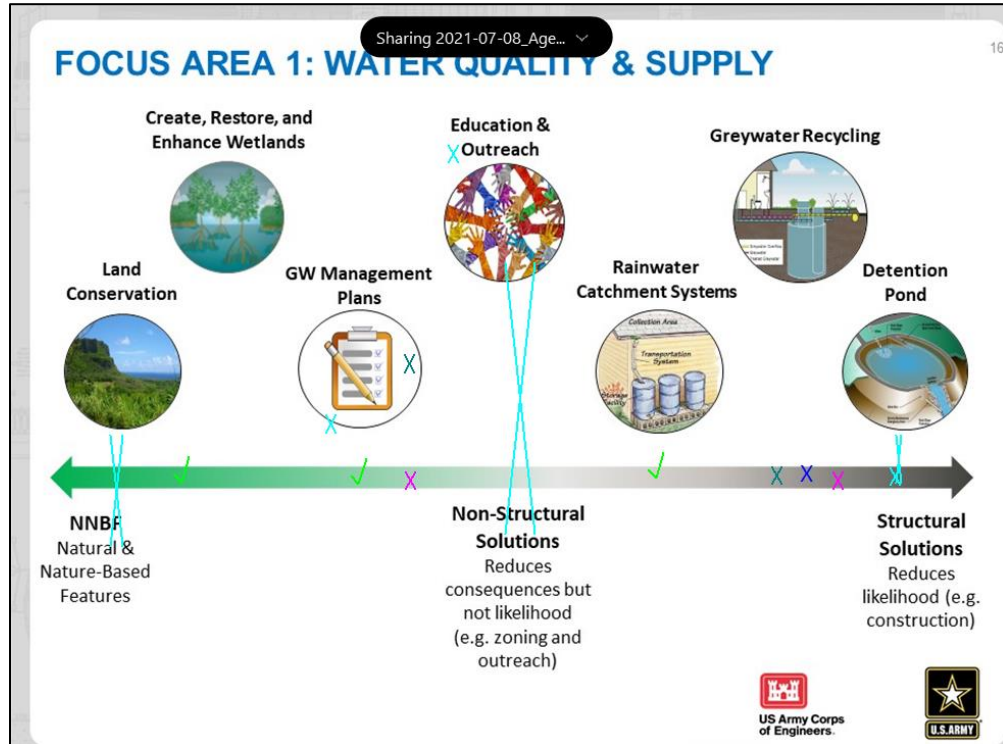


Figure 2. Water Quality and Supply Recommendation Preferences

Stakeholder Meeting #7

Date and Location: August 9 & 12, 2021, virtual

Purpose: To receive input on risk-based prioritization and uncertainty associated with the problem categories and stressors, and identify the impacted areas on Tinian, Saipan, and Rota.

Meeting Attendance:

- USACE
- CNMI-OPD
- CNMI-DCRM
- CNMI-DOA
- CNMI-BECQ
- CNMI Forestry
- PCRP
- CUC
- NOAA

Discussion Summary: USACE developed an interactive slide deck to receive direct input on risks associated with each of the problem focus areas and types of measures that would be beneficial. Additionally, the slides were marked up with the areas that were being impacted from each of the stressors. Examples of these slides are provided below. To see the full annotated slide deck, see Attachment 4 at the end of this appendix.



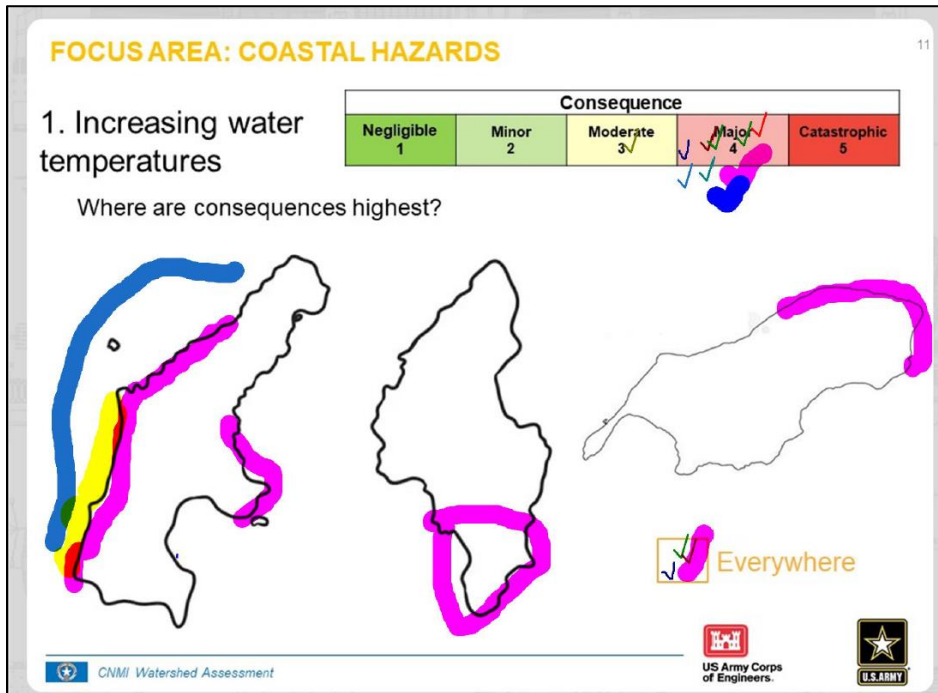


Figure 3. Coastal Hazards Preliminary Consequences Assessment

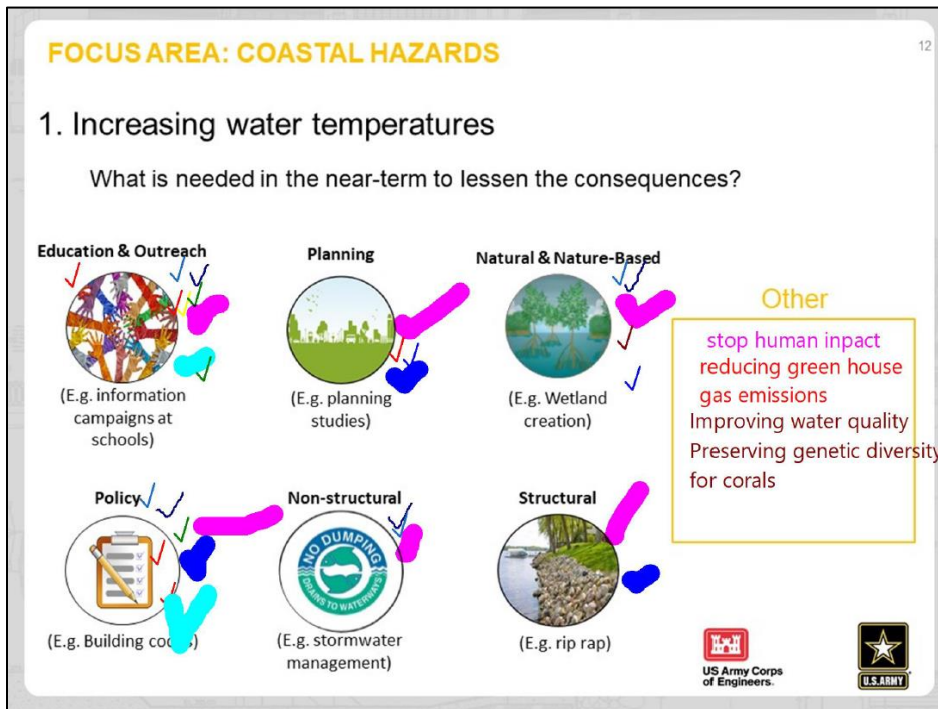


Figure 4. Coastal Hazards Recommendation Preferences



Stakeholder Meeting #8

Date and Location: September 28 & 29, 2021, virtual

Purpose: To review the final draft risk-based prioritization and uncertainty, measures, and draft recommendations, and implementation prior to the Recommendations Milestone.

Meeting Attendance:

- USACE
- CNMI-OPD
- CNMI-DCRM
- CNMI-BECQ
- NOAA

Discussion Summary:

- Received inquiries on the inclusion of earthquake, seismic activity, and food security problems/stressors. Per the authority the watershed assessment is being conducted under, if these additional items are included they will need to focus on their impacts to water resources.
- Recommendation to turn the ‘tsunami’ problem/stressor into a new seismic activity category along with earthquake and volcanic activity. USACE team drafted up the inclusion of these items and sent out for stakeholder review and edit.
- Reviewed measures list for nature-based, structural, and nonstructural solutions:
 - Inclusion of a beach nourishment measure can help reduce coastal erosion, increase beach widening, improve buffering, and increase shoreline.
 - Best Management Practices could technically be applied to all the stressors.
 - Include a shear stress analysis measure to help address stressors related to freshwater flooding and erosion.
 - The measures are broken out into three distinct categories (nature-based, structural, and nonstructural), but there is overlap between the categories they could fall into.
 - Inclusion of a Marine Protected Area boundary marker measure to help enforcement with clearly marked boundaries.
 - Food security is a concern (most food is imported). A 2015 storm blew over some shipping containers, which led to significant delays and port closures. A contingency plan has since been developed to hopefully improve disaster and emergency response.
 - Freshwater stressors were adjusted to reflect their uncertainty more accurately.

Stakeholder Meeting (Water & Power) #9

Date and Location: November 2, 2021, virtual

Purpose: To walk through a series of questions the USACE team compiled to receive input from the stakeholders on a variety of topics.

Meeting Attendance:



- USACE
- CNMI-DCRM
- CNMI-BECQ
- FEMA
- USGS
- HUD
- EPA
- USBR

Discussion Summary:

- USACE provided a presentation on Silver Jackets as a response to interest in creating a CNMI team in the near future.
- There was an emphasis expressed on integrating Smart, Safe Growth principles into all the efforts throughout CNMI.
- Agencies provided updates on anything new that has happened since the last meeting. The draft recovery project tracker FEMA has been compiling will be sent out shortly for team review. This document will be useful for the watershed assessment implementation strategy.
- To help make these meetings as beneficial as possible, USACE and FEMA planned to coordinate to further discuss long term goals of the meeting and what objectives will be met.

Stakeholder Meeting #10

Date and Location: December 15, 2021, virtual

Purpose: To review comments the partners provided on the Recommendations Milestone Report Summary.

Meeting Attendance:

- USACE
- CNMI-OPD
- CNMI-DCRM

Discussion Summary:

- Partners provided review comments to better capture cultural sensitivity, additional measures, and address editorial inconsistencies.
- The team decided against adding volcanic/seismic activity as a problem statement but will make the connection to this issue in the existing/future without-project conditions write-ups.
- Changes were proposed to the life loss, economic, and environmental/cultural risk assessment plots.



Stakeholder Meeting #11: Watershed Working Group Meeting (Site Visit)

Date and Location: March 1, 2022, Saipan, CNMI

Purpose: To visit different areas of the study area to gain a better understanding of the issues, meet with local/Federal agencies and government officials to listen to and hear their concerns, and verify the work that the team had completed to date was accurate for the final report.

Discussion Summary:

- The team provided high-level overview of the study, including: study authority, partners and stakeholders, suite of problems being addressed, and risk- and uncertainty-based prioritization, and recommendation development strategy.
- The team learned groundwater management is not good on Saipan.
- Stormwater management is a significant concern throughout CNMI.
- A number of upcoming funding grant resources will be available in the near future.

Stakeholder Meeting #12: CNMI-DCRM (Site Visit)

Date and Location: March 1, 2022, Saipan, CNMI

Purpose: To visit different areas of the study area to gain a better understanding of the issues, meet with local/Federal agencies and government officials to listen to and hear their concerns, and verify the work that the team had completed to date was accurate for the final report.

Discussion Summary:

- The team provided high-level overview of the study, including study authority, partners and stakeholders, suite of problems being addressed, and risk- and uncertainty-based prioritization, and recommendation development strategy.
- CNMI-DCRM funding often comes from other Federal sources, so listing that directly as funding source isn't completely accurate under some scenarios.
- The current priorities of CNMI-DCRM include wetlands management, coastal hazards, ageing/inadequate infrastructure, coral restoration, and recovering from war effects.
- The meeting attendees provided potential recommendations, which included: shoreline enhancement, increased shoreline monitoring, harbor protection, and unexploded ordinance training to landowners.

Stakeholder Meeting #13: FEMA (Site Visit)

Date and Location: March 1, 2022, Saipan, CNMI

Purpose: To visit different areas of the study area to gain a better understanding of the issues, meet with local/Federal agencies and government officials to listen to and hear their concerns, and verify the work that the team had completed to date was accurate for the final report.

Discussion Summary:

- The team provided high-level overview of the study, including study authority, partners and stakeholders, suite of problems being addressed, and risk- and uncertainty-based prioritization, and recommendation development strategy.
- The team learned about various funding sources through FEMA.
- It was strongly suggested to ensure recommendations are tailored to the CNMI.



Stakeholder Meeting #14: CNMI Infrastructure Recovery Program (Site Visit)

Date and Location: March 2, 2022, Saipan, CNMI

Purpose: To visit different areas of the study area to gain a better understanding of the issues, meet with local/Federal agencies and government officials to listen to and hear their concerns, and verify the work that the team had completed to date was accurate for the final report.

Discussion Summary:

- The team provided high-level overview of the study, including: study authority, partners and stakeholders, suite of problems being addressed, and risk- and uncertainty-based prioritization, and recommendation development strategy.
- The team learned of a couple of additional agencies to send the draft report document out for agency and public review in March 2022.
- Recommendations provided to the team included identifying data gaps, adding a recommendation to provide incentives for wetland maintenance, and watershed education outreach.
- The team discussed current initiatives to set up a CNMI Silver Jackets team.

Stakeholder Meeting #15: Historic Preservation Office (HPO) (Site Visit)

Date and Location: March 2, 2022, Saipan, CNMI

Purpose: To visit different areas of the study area to gain a better understanding of the issues, meet with local/Federal agencies and government officials to listen to and hear their concerns, and verify the work that the team had completed to date was accurate for the final report.

Discussion Summary:

- The team provided high-level overview of the study, including: study authority, partners and stakeholders, suite of problems being addressed, and risk- and uncertainty-based prioritization, and recommendation development strategy.
- The HPO team is currently working on a Disaster Recovery Management Plan.
- The National Park Service is their main grantor.
- Typhoon Yutu and CoVID-19 response and recovery efforts have taken priority over other tasks.
- Recommendations provided to the team included shoreline cultural protection, additional generator for backup power, and a resources survey.
- The team discussed current initiatives to set up a CNMI Silver Jackets team.

Stakeholder Meeting #16: Tinian Mayor's Office (Site Visit)

Date and Location: March 3, 2022, Saipan, CNMI

Purpose: To visit different areas of the study area to gain a better understanding of the issues, meet with local/Federal agencies and government officials to listen to and hear their concerns, and verify the work that the team had completed to date was accurate for the final report.

Discussion Summary:



- The team provided high-level overview of the study, including: study authority, partners and stakeholders, suite of problems being addressed, and risk- and uncertainty-based prioritization, and recommendation development strategy.
- The team heard from meetings attendees that water quality is a high priority for the island. They only have one water source.
- The marina is falling apart due to a deteriorating breakwater.
- Due to a high number of fruit trees around the island, adequate water supply to support their growth is a concern.
- The emergency warning system is broken and needs repairs.
- Potential recommendations provided to the team included breakwater replacement, warning system improvements, and water infrastructure improvements.
- The team learned about the Department of Defense's current occupation of nearly 2/3 of the island.



The Commonwealth of the Northern Mariana Islands

Final Watershed Plan

APPENDIX A - Attachment 1

Agency Coordination Letters

July 2022



**US Army Corps
of Engineers**®
Honolulu District





DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

January 14, 2021

Civil and Public Works Branch
Programs and Project Management Division

Ms. Rita Chong-Dela Cruz
Saipan Historic Preservation Officer
Division of Historic Preservation
Department of Community and Cultural Affairs
Caller Box 10007
Saipan, MP 96950, USA

Dear Ms. Chong-Dela Cruz:

The Honolulu District, U.S. Army Corps of Engineers (Corps) is conducting Post-Disaster Watershed Assessments (assessments) for the Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), (see Enclosure). The assessments are being conducted pursuant to Section 729 of the Water Resources Development Act of 1986, as amended, and funded under the Additional Supplemental Appropriations for Disaster Relief Act of 2019 (Public Law 116-20), enacted on June 6, 2019. As authorized, these assessments will address identified water resources needs, provide a shared vision of a desired end state, and provide recommendations for potential future involvement by the Corps, other federal agencies, or non-federal interests. In response to typhoons and tropical cyclones striking the territories in 2018, the Corps received disaster relief funds in January 2020. The assessments are fully federally funded and expected to be complete by 2022.

Pursuant to Planning Bulletin 2019-01 Watershed Studies, we are consulting our agency partners to gather data necessary to develop the Shared Vision among stakeholders. One of our goals at this time is to determine the baseline conditions and existing environment within the study area to assist in the development of recommendations to be described in the assessment. We invite you and other federal and state agencies, cultural organizations, local agencies, interested parties, and individuals interested in providing comments and identifying any issues or concerns to participate in this collaborative effort.

We recognize that the Saipan Historic Preservation Officer's responsibilities and expertise in preserving the places that matter will be beneficial towards addressing cultural resources within our Watershed Assessments. Your agency's technical expertise on identifying any natural or cultural resources, as well as resources considered to be of traditional, cultural, or religious importance to the citizens and communities of Saipan would help create a holistic Shared Vision that can properly

address cultural resources. We understand many culturally sensitive sites, including areas of ceremonial significance, exist throughout the three territories. Any comments and information received by your agency will be fully considered in a confidential and respectful manner pursuant to 36 CFR § 800.11(c) throughout the development of the final Watershed Assessment. Additional study background information is below:

Problems by U.S. Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and landslides. These problems pose a threat to public health and safety and the health of the environment.

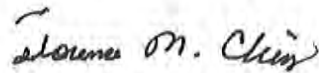
Guam has two distinct geographic landscapes; Northern Guam is comprised of limestone plateau while Southern Guam contains ridgelines from volcanic rises. Problems identified in Northern Guam include threats to the Northern Lens Aquifer (main source of drinking water) from exposure to nitrates from septic tanks and land use practices, poor storm water management and infrastructure allowing point-source pollution to flow into the near shore waters. Problems identified in Southern Guam include heavy conveyance of water that carries sediments and pollutants to the river deltas, resulting in algal blooms and coral reef decline, severe riverbank erosion resulting in loss of property and exacerbating water quality issues, lack of forested lands due to prescribed fires for development, and reforestation plans that are missing diversity of native species to reduce erosion and promote biodiversity.

The CNMI is comprised of 14 islands, of which, five are inhabited. The assessment is focused on the villages on the islands of Saipan, Tinian, and Rota. The following problems were identified through prior studies and input from CNMI stakeholders/agencies: Frequent intense rainfall events trigger flooding along watercourses and in low lying areas, causing life safety risks and economic damages, including effects to critical infrastructure (Saipan). Storms and high wave events contribute to coastal erosion, endangering critical infrastructure (Saipan and Rota). Flooding reduces water quality and water supply, leading to contaminated drinking water (Saipan, Tinian, and Rota). Wildfires exacerbated by drought and invasive species threaten the ecology (Tinian and Rota).

Stakeholder meetings were held virtually in July 2020. The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

We appreciate your cooperation on this matter and respectfully request a response within 30 days. We will continue to coordinate this effort with you as the study progresses and the assessment is developed. Should you have any questions, comments, or wish to request either an extension for response or a meeting to discuss this request, please contact Ms. Jessie K. Paahana, Environmental Coordinator, Civil and Public Works Branch, Honolulu District at (808) 835-4042 or e-mail: jessie.k.paahana@usace.army.mil.

Sincerely,



Florence M. Ching, P.E.
Acting Deputy District Engineer
Programs and Project Management

Enclosure

USACE FY 19 Emergency Supplemental Watershed Study Area Maps

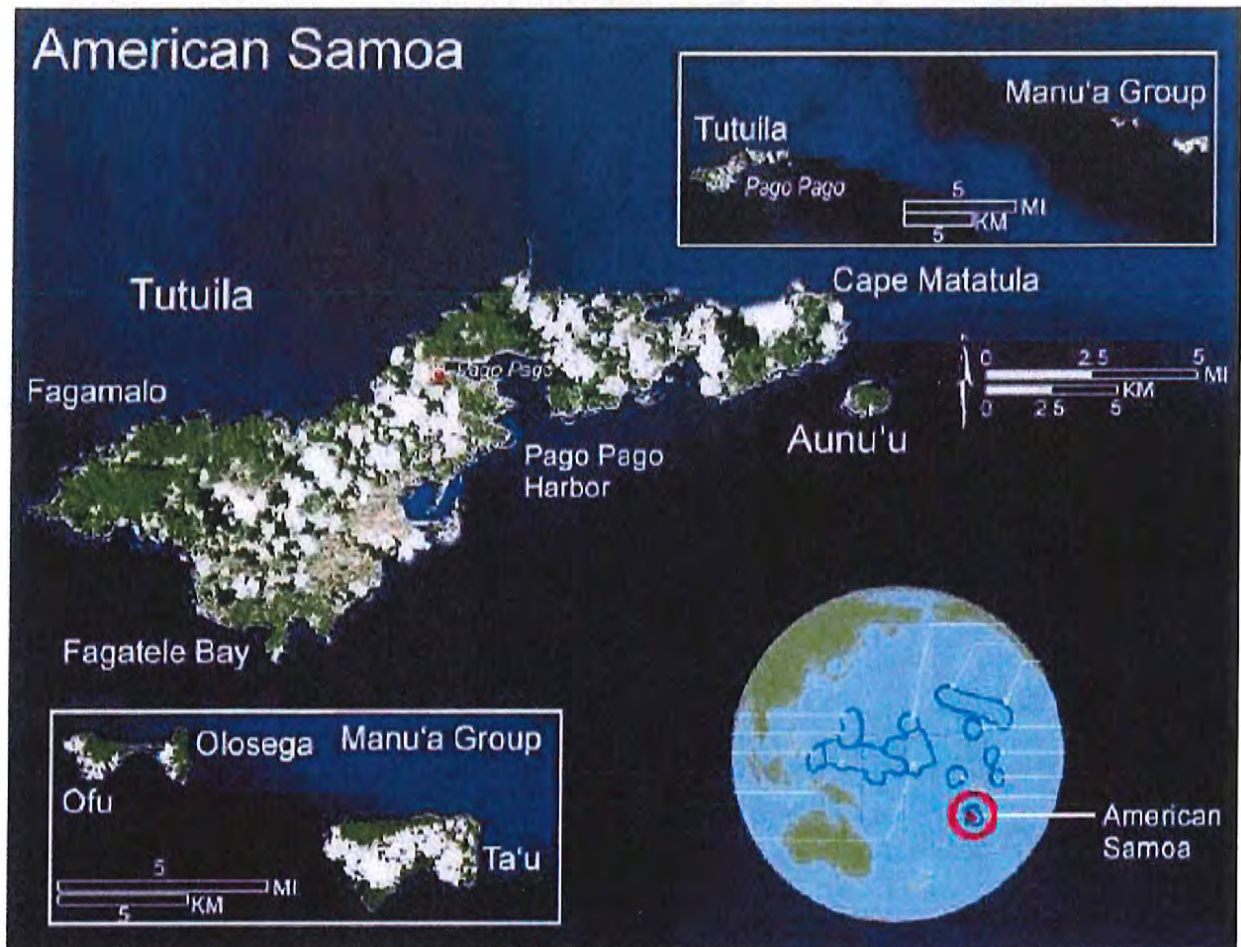


Figure 1. American Samoa Study Area

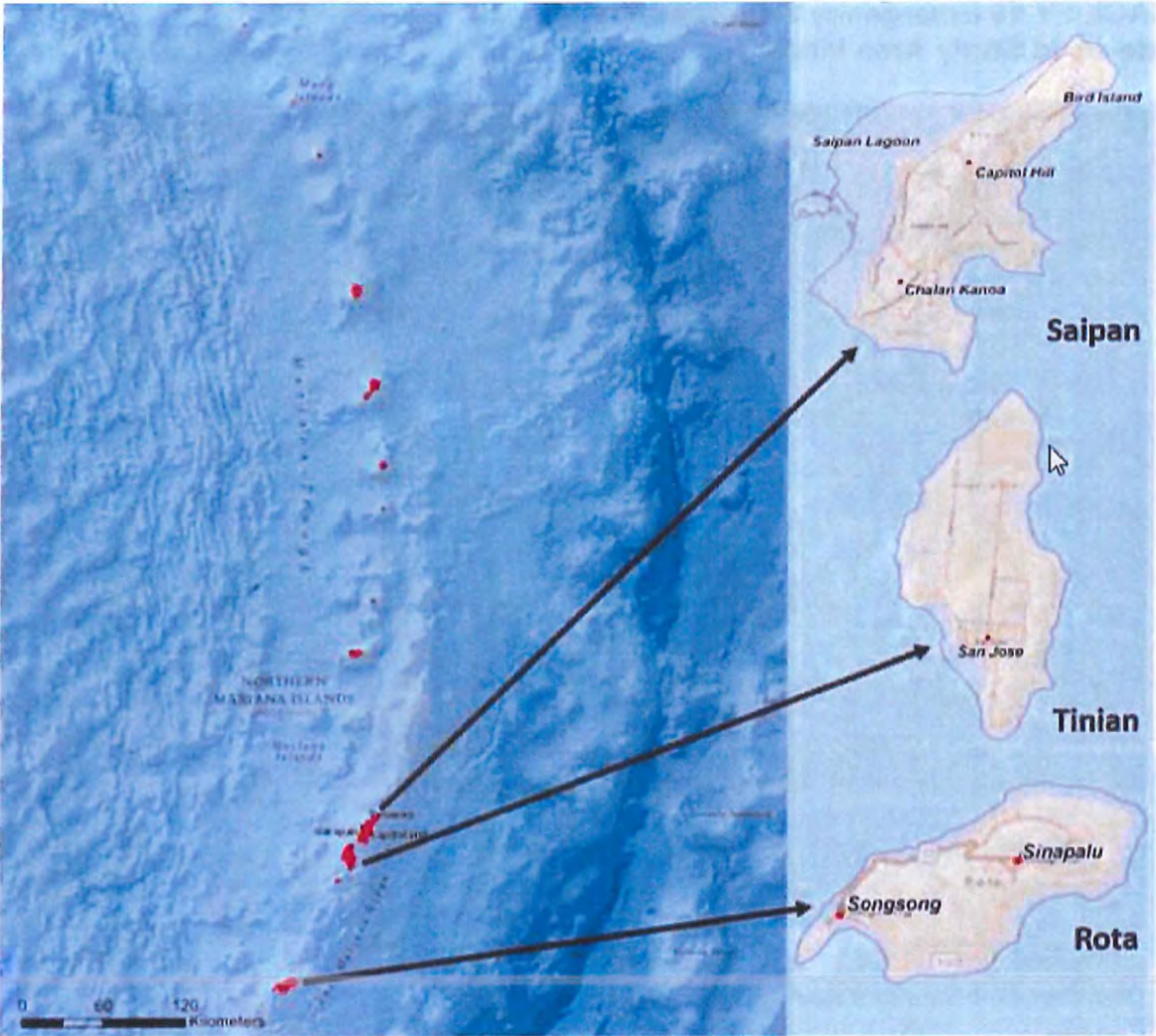


Figure 2. Commonwealth of the Northern Mariana Islands Study Area



Guam Watershed Assessment
Figure 3. Guam Study Area



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII.96858-5440

January 14, 2021

Civil and Public Works Branch
Programs and Project Management Division

Dr. Eric Brown, National Park Service
Kalaupapa National Historic Park
National Park Service
PO Box 2222
Kalaupapa, HI 96742

Dear Dr. Brown:

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Pursuant to Planning Bulletin 2019-01 Watershed Studies, we are consulting our agency partners to gather data necessary to develop the Shared Vision among stakeholders. One of our goals at this time is to determine the baseline conditions and existing environment within the study area to assist in the development of recommendations to be described in the assessment. We invite the National Park Service (NPS) and other federal and state agencies, cultural organizations, local agencies, interested parties, and individuals interested in providing comments and identifying any issues or concerns to participate in this collaborative effort. We request your technical assistance in identifying any natural resources or other resources of concern subject to the NPS purview occurring within the study area. Any comments received will be fully considered in the development of the final Watershed Assessment. Additional study background information is provided below:

Problems by U.S. Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and landslides. These problems pose a threat to public health and safety and the health of the environment.

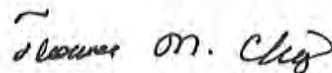
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Stakeholder meetings were held virtually in July and November 2020. The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

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Sincerely,



Florence Ching, P.E.
Acting Deputy District Engineer
Programs and Project Management

Enclosure

USACE FY 19 Emergency Supplemental Watershed Study Area Maps

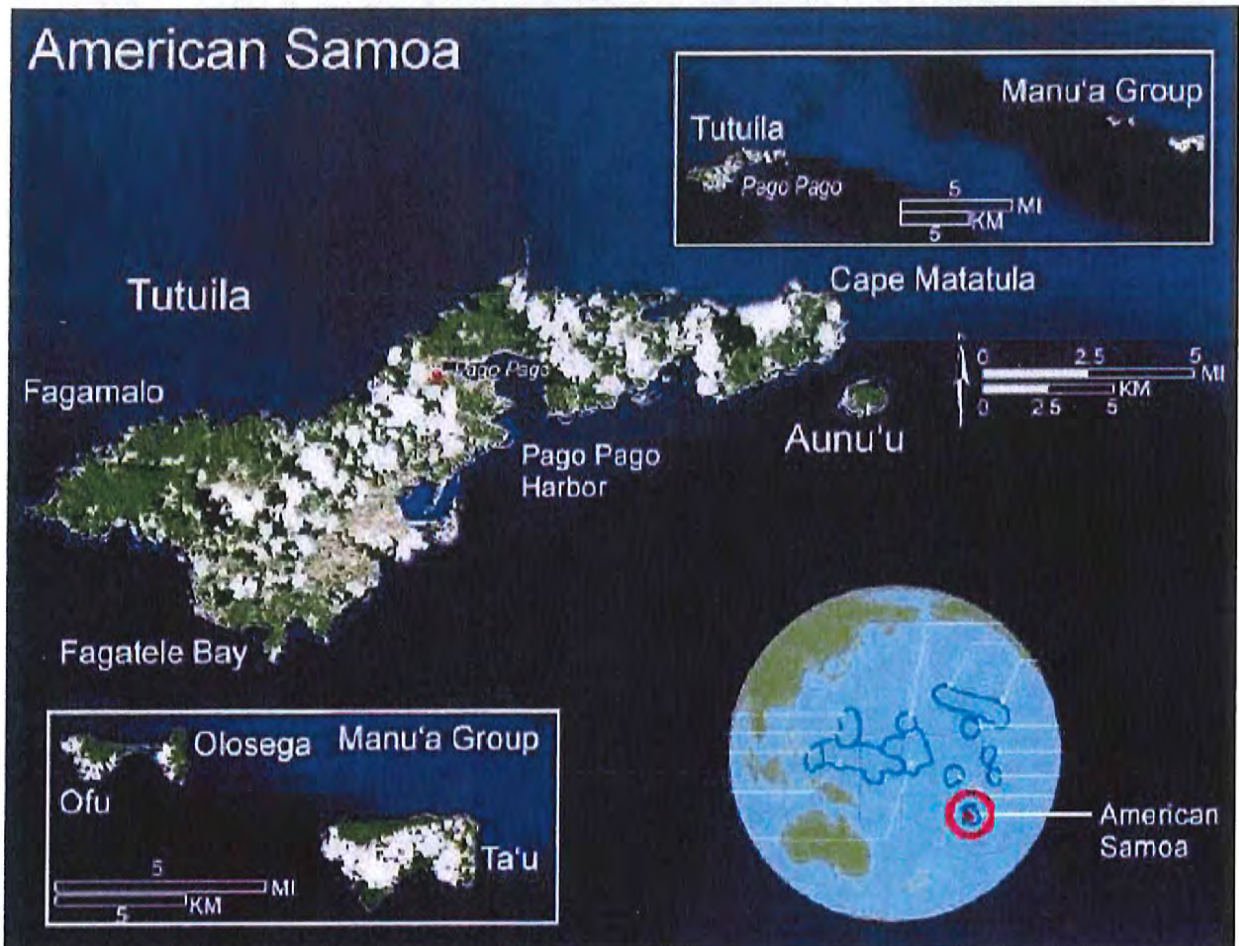


Figure 1. American Samoa Study Area

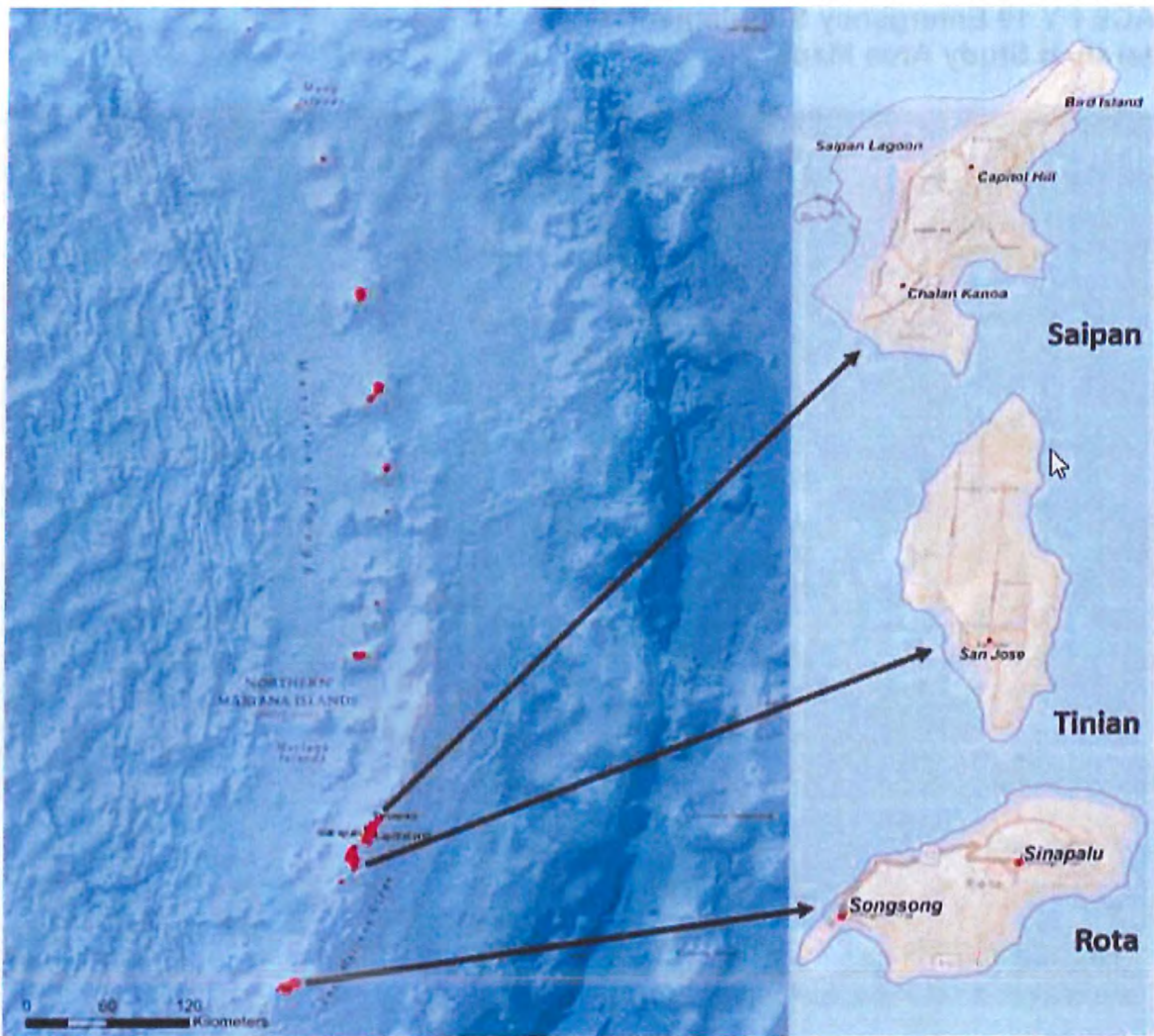
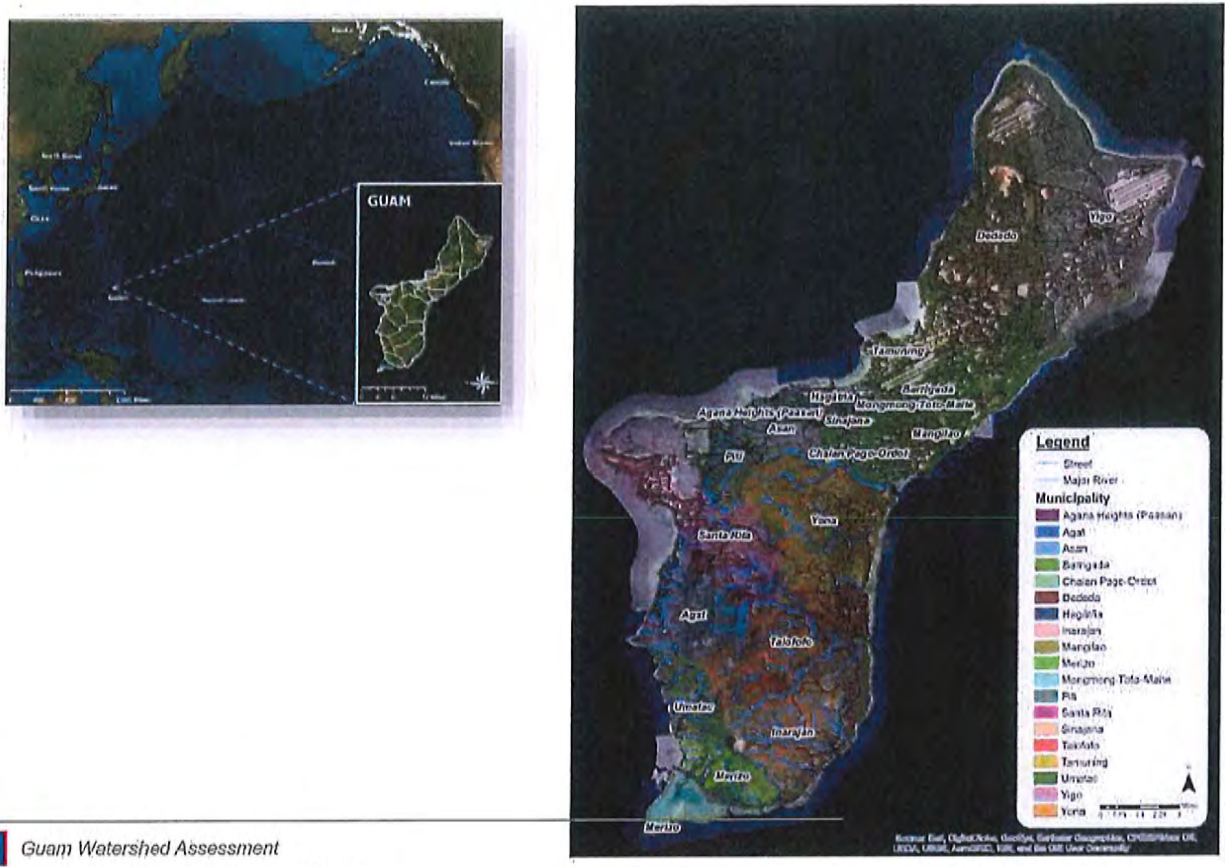


Figure 2. Commonwealth of the Northern Mariana Islands Study Area



Guam Watershed Assessment
Figure 3. Guam Study Area



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

January 14, 2021

Civil and Public Works Branch
Programs and Project Management Division

Patrick Lujan, Historic Preservation Officer
Historic Resources Division
Department of Parks & Recreation, Government of Guam
490 Chalan Palasyo
Agana Heights, Guam 96910, USA

Dear Mr. Lujan:

The Honolulu District, U.S. Army Corps of Engineers (Corps) is conducting Post-Disaster Watershed Assessments (assessments) for the Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), (see Enclosure). The assessments are being conducted pursuant to Section 729 of the Water Resources Development Act of 1986, as amended, and funded under the Additional Supplemental Appropriations for Disaster Relief Act of 2019 (Public Law 116-20), enacted on June 6, 2019. As authorized, these assessments will address identified water resources needs, provide a shared vision of a desired end state, and provide recommendations for potential involvement by the Corps, other federal agencies, or non-federal interests. In response to typhoons and tropical cyclones striking the territories in 2018, the Corps received disaster relief funds in January 2020. The assessments are fully federally funded and expected to be complete by 2022.

Pursuant to Planning Bulletin 2019-01 Watershed Studies, we are consulting our agency partners to gather data necessary to develop the Shared Vision among stakeholders. One of our goals at this time is to determine the baseline conditions and existing environment within the study area to assist in the development of recommendations to be described in the assessment. We invite you and other federal and state agencies, cultural organizations, local agencies, interested parties, and individuals interested in providing comments and identifying any issues or concerns to participate in this collaborative effort.

We recognize that the Guam Historic Preservation Officer's responsibilities and expertise in preserving the places that matter will be beneficial towards addressing cultural resources within our Watershed Assessments. Your agency's technical expertise on identifying any natural or cultural resources, as well as resources considered to be of traditional, cultural, or religious importance to the citizens and communities of Guam would help create a holistic Shared Vision that can properly address cultural resources. We understand many culturally sensitive sites, including

areas of ceremonial significance, exist throughout the three territories. Any comments and information received by your agency will be fully considered in a confidential and respectful manner pursuant to 36 CFR § 800.11(c) throughout the development of the final Watershed Assessment. Additional study background information is below:

Problems by U.S. Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and landslides. These problems pose a threat to public health and safety and the health of the environment.

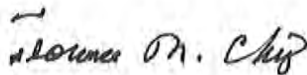
Guam has two distinct geographic landscapes; Northern Guam is comprised of limestone plateau while Southern Guam contains ridgelines from volcanic rises. Problems identified in Northern Guam include threats to the Northern Lens Aquifer (main source of drinking water) from exposure to nitrates from septic tanks and land use practices, poor storm water management and infrastructure allowing point-source pollution to flow into the near shore waters. Problems identified in Southern Guam include heavy conveyance of water that carries sediment and pollutants to the river deltas, resulting in algal blooms and coral reef decline, severe riverbank erosion resulting in loss of property and exacerbating water quality issues, lack of forested lands due to prescribed fires for development, and reforestation plans that are missing diversity of native species to reduce erosion and promote biodiversity.

The CNMI is comprised of 14 islands, of which, five are inhabited. The assessment is focused on the villages on the islands of Saipan, Tinian, and Rota. The following problems were identified through prior studies and input from CNMI stakeholders/agencies: Frequent intense rainfall events trigger flooding along watercourses and in low lying areas, causing life safety risks and economic damages, including effects to critical infrastructure (Saipan). Storms and high wave events contribute to coastal erosion, endangering critical infrastructure (Saipan and Rota). Flooding reduces water quality and water supply, leading to contaminated drinking water (Saipan, Tinian, and Rota). Wildfires exacerbated by drought and invasive species threaten the ecology (Tinian and Rota).

Stakeholder meetings were held virtually in July and November 2020. The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

We appreciate your cooperation on this matter and respectfully request a response within 30 days. We will continue to coordinate this effort with you as the study progresses and the assessment is developed. Should you have any questions, comments, or wish to request either an extension for response or a meeting to discuss this request, please contact Ms. Jessie K. Paahana, Environmental Coordinator, Civil and Public Works Branch, Honolulu District at (808) 835-4042 or e-mail: jessie.k.paahana@usace.army.mil.

Sincerely,

A handwritten signature in black ink that reads "Florence M. Ching". The signature is written in a cursive style with a small flourish above the first letter of the first name.

Florence Ching, P.E.
Acting Deputy District Engineer
Programs and Project Management

Enclosure

USACE FY 19 Emergency Supplemental Watershed Study Area Maps

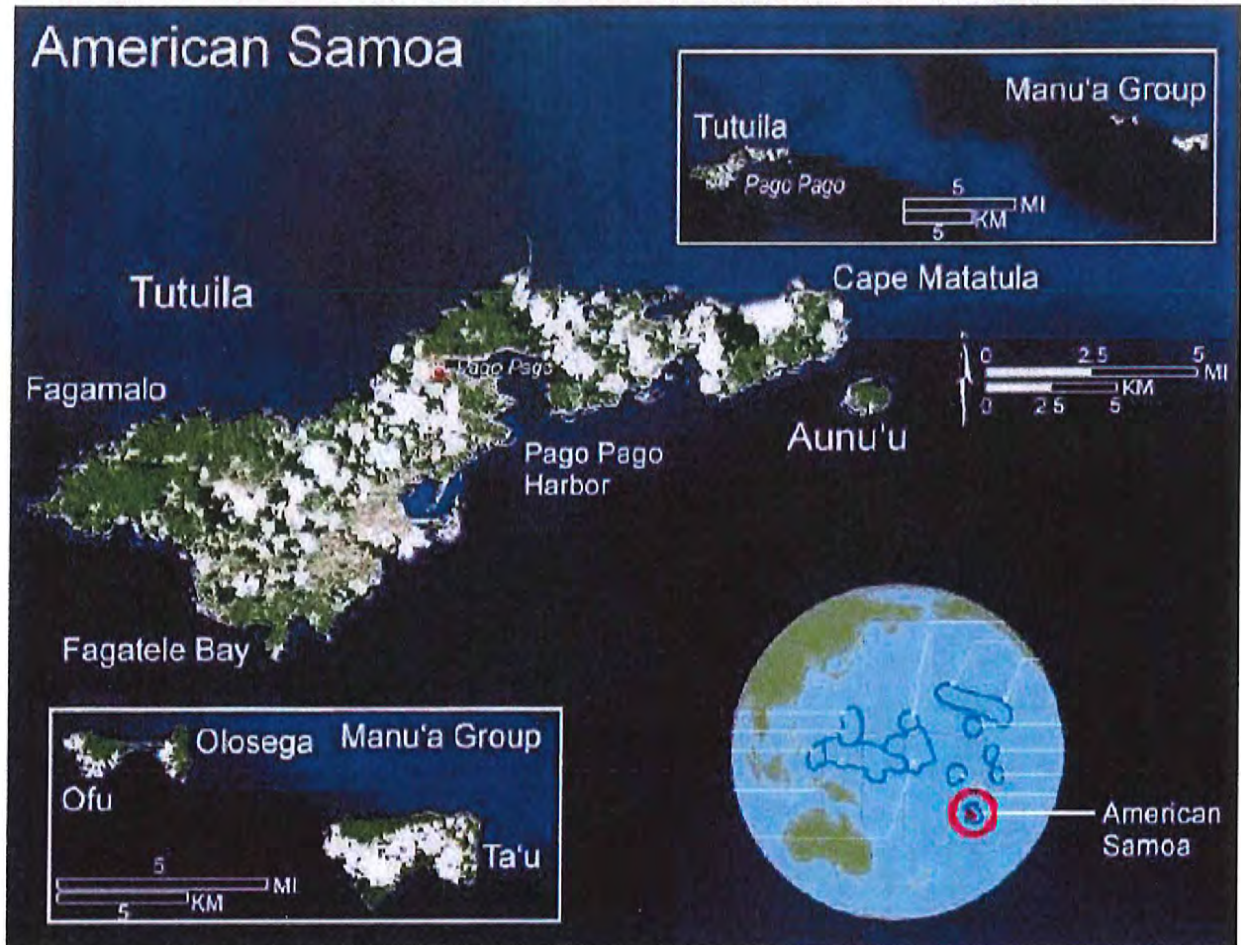


Figure 1. American Samoa Study Area

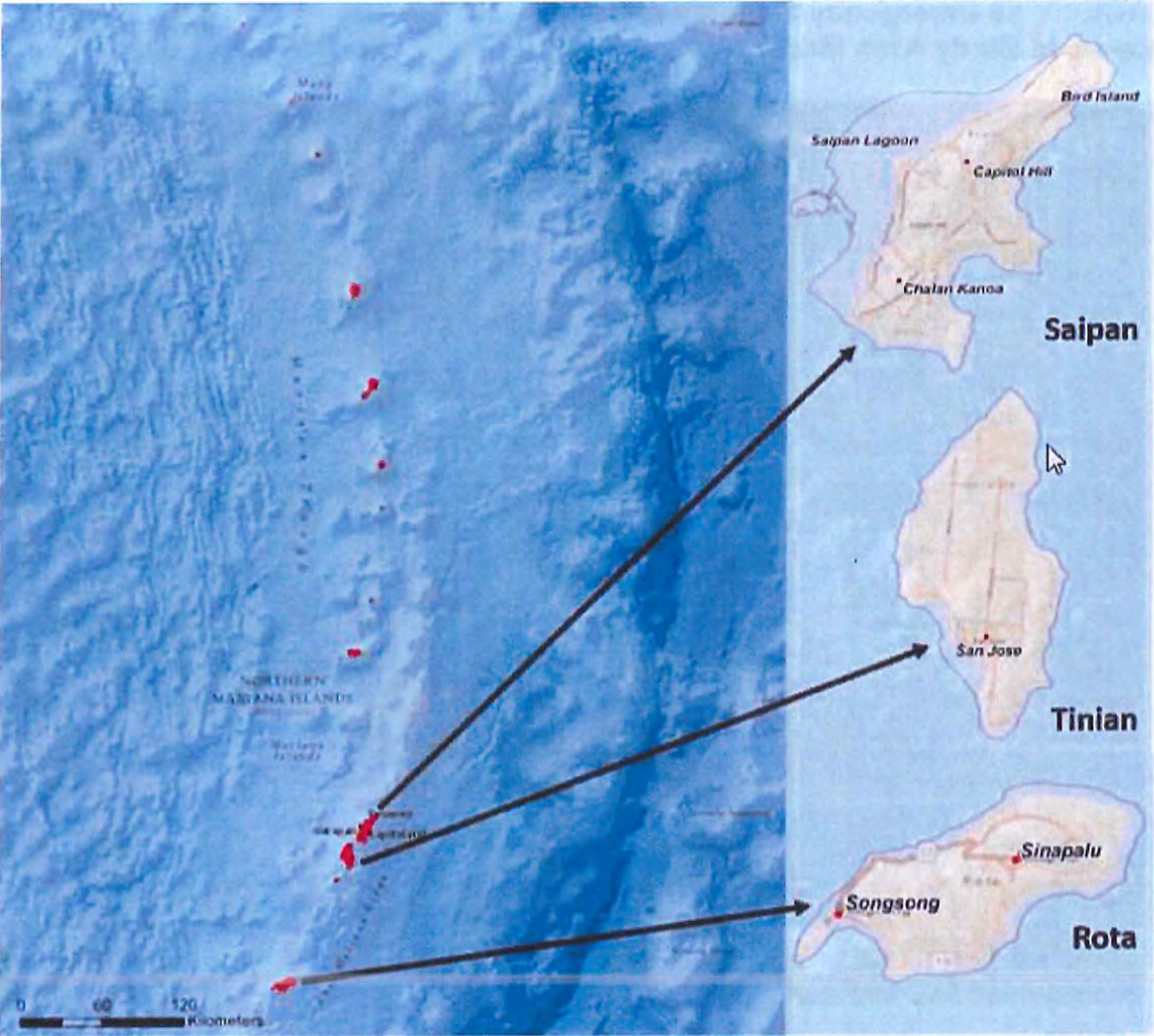



Figure 2. Commonwealth of the Northern Mariana Islands Study Area



 *Guam Watershed Assessment*
Figure 3. Guam Study Area



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

January 14, 2021

Civil and Public Works Branch
Programs and Project Management Division

Ms. Tish Folau
Ms. Letitia Peau
Executive Offices of the Governor
American Samoa Government
Historic Preservation Office
Pago Pago, American Samoa 96799

Dear Ms. Folau and Ms. Peau:

The Honolulu District, U.S. Army Corps of Engineers (Corps) is conducting Post-Disaster Watershed Assessments (assessments) for the Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), (see Enclosure). The assessments are being conducted pursuant to Section 729 of the Water Resources Development Act of 1986, as amended, and funded under the Additional Supplemental Appropriations for Disaster Relief Act of 2019 (Public Law 116-20), enacted on June 6, 2019. As authorized, these assessments will address identified water resources needs, provide a shared vision of a desired end state, and provide recommendations for potential involvement by the Corps, other federal agencies, or non-federal interests. In response to typhoons and tropical cyclones striking the territories in 2018, the Corps received disaster relief funds in January 2020. The assessments are fully federally funded and expected to be complete by 2022.

Pursuant to Planning Bulletin 2019-01 Watershed Studies, we are consulting our agency partners to gather data necessary to develop the Shared Vision among stakeholders. One of our goals at this time is to determine the baseline conditions and existing environment within the study area to assist in the development of recommendations to be described in the assessment. We invite you and other federal and state agencies, cultural organizations, local agencies, interested parties, and individuals interested in providing comments and identifying any issues or concerns to participate in this collaborative effort.

We recognize that the American Samoa State Historic Preservation Officer's responsibilities and expertise in preserving the places that matter will be beneficial towards addressing cultural resources within our Watershed Assessments. Your agency's technical expertise on identifying any natural or cultural resources, as well as resources considered to be of traditional, cultural, or religious importance to the citizens and communities of the American Samoa would help create a holistic Shared Vision

that can properly address cultural resources. We understand many culturally sensitive sites, including areas of ceremonial significance, exist throughout the three territories. Any comments and information received by your agency will be fully considered in a confidential and respectful manner pursuant to 36 CFR § 800.11(c) throughout the development of the final Watershed Assessment. Additional study background information is below:

Problems by U.S. Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and landslides. These problems pose a threat to public health and safety and the health of the environment.

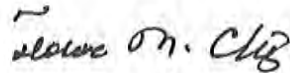
Guam has two distinct geographic landscapes; Northern Guam is comprised of limestone plateau while Southern Guam contains ridgelines from volcanic rises. Problems identified in Northern Guam include threats to the Northern Lens Aquifer (main source of drinking water) from exposure to nitrates from septic tanks and land use practices, poor storm water management and infrastructure allowing point-source pollution to flow into the near shore waters. Problems identified in Southern Guam include heavy conveyance of water that carries sediment and pollutants to the river deltas, resulting in algal blooms and coral reef decline, severe riverbank erosion resulting in loss of property and exacerbating water quality issues, lack of forested lands due to prescribed fires for development, and reforestation plans that are missing diversity of native species to reduce erosion and promote biodiversity.

The CNMI is comprised of 14 islands, of which, five are inhabited. The assessment is focused on the villages on the islands of Saipan, Tinian, and Rota. The following problems were identified through prior studies and input from CNMI stakeholders/agencies: Frequent intense rainfall events trigger flooding along watercourses and in low lying areas, causing life safety risks and economic damages, including effects to critical infrastructure (Saipan). Storms and high wave events contribute to coastal erosion, endangering critical infrastructure (Saipan and Rota). Flooding reduces water quality and water supply, leading to contaminated drinking water (Saipan, Tinian, and Rota). Wildfires exacerbated by drought and invasive species threaten the ecology (Tinian and Rota).

Stakeholder meetings were held virtually in July and November 2020. The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

We appreciate your cooperation on this matter and respectfully request a response within 30 days. We will continue to coordinate this effort with you as the study progresses and the assessment is developed. Should you have any questions, comments, or wish to request either an extension for response or a meeting to discuss this request, please contact Ms. Jessie K. Paahana, Environmental Coordinator, Civil and Public Works Branch, Honolulu District at (808) 835-4042 or e-mail: jessie.k.paahana@usace.army.mil.

Sincerely,

A handwritten signature in black ink that reads "Florence M. Ching". The signature is written in a cursive style with a small flourish above the first letter of the first name.

Florence Ching, P.E.
Acting Deputy District Engineer
Programs and Project Management

Enclosure

USACE FY 19 Emergency Supplemental Watershed Study Area Maps

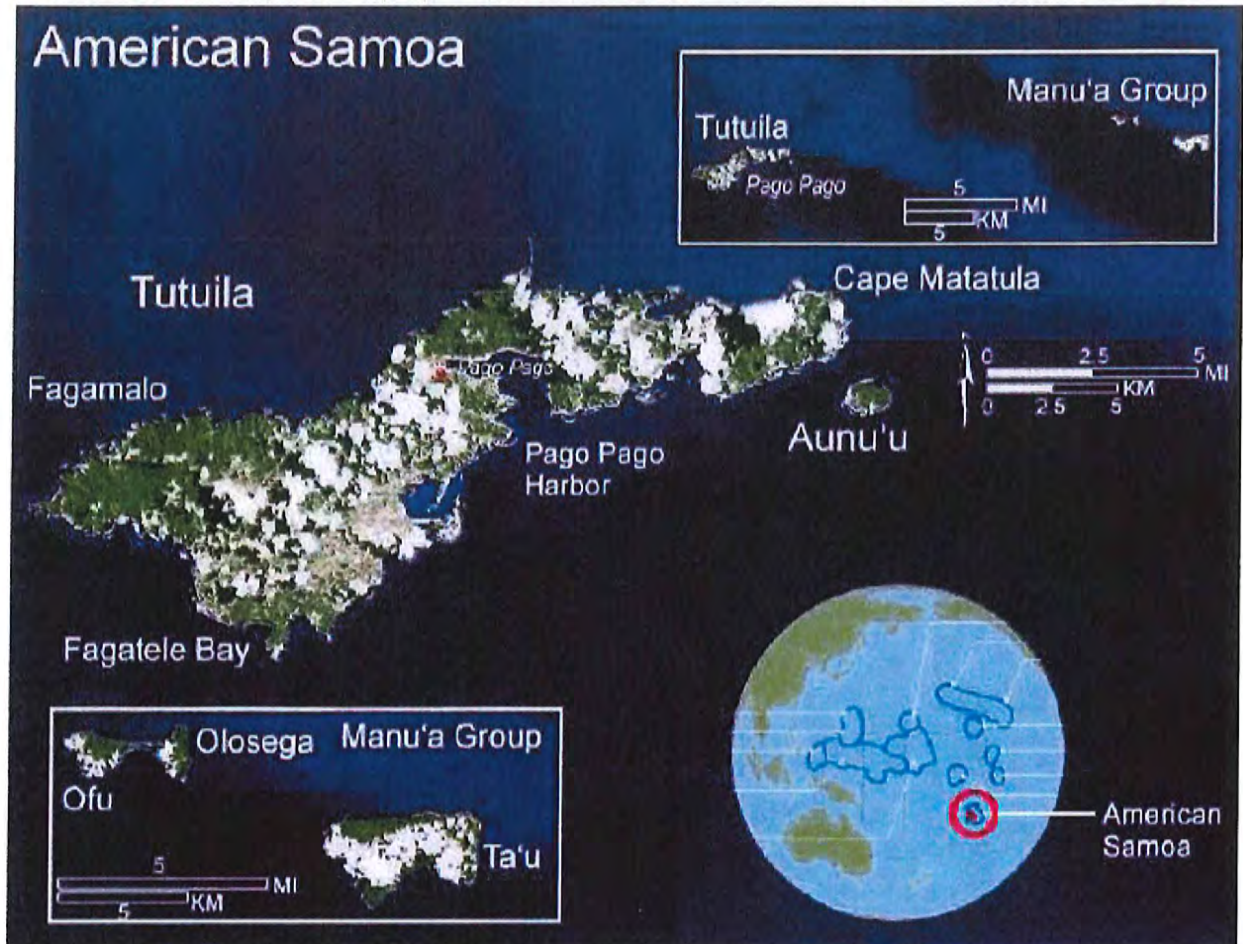


Figure 1. American Samoa Study Area

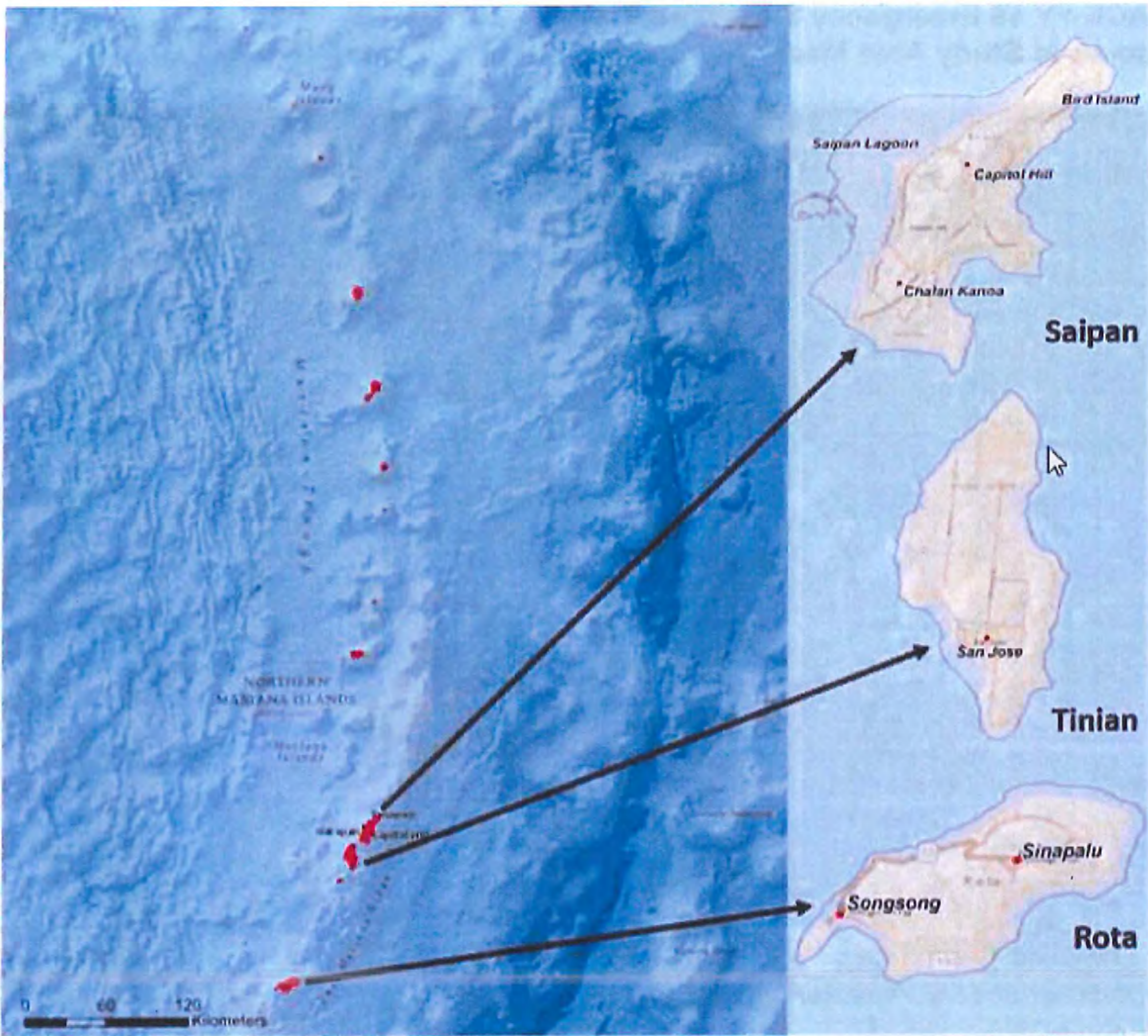



Figure 2. Commonwealth of the Northern Mariana Islands Study Area



 Guam Watershed Assessment
Figure 3. Guam Study Area



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

January 14, 2021

Civil and Public Works Branch
Programs and Project Management Division

Ms. Chelsa Muña-Brecht, Director
Department of Agriculture
163 Dairy Road
Mangilao, Guam 96913

Dear Director Muña-Brecht:

The Honolulu District, U.S. Army Corps of Engineers (Corps) is conducting Post-Disaster Watershed Assessments (assessments) for the Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), (see Enclosure). The assessments are being conducted pursuant to Section 729 of the Water Resources Development Act of 1986, as amended, and funded under the Additional Supplemental Appropriations for Disaster Relief Act of 2019 (Public Law 116-20), enacted on June 6, 2019. As authorized, these assessments will address identified water resources needs, provide a shared vision of a desired end state, and provide recommendations for potential involvement by the Corps, other federal agencies, or non-federal interests. In response to typhoons and tropical cyclones striking the territories in 2018, the Corps received disaster relief funds in January 2020. The assessments are fully federally funded and expected to be complete by 2022.

We appreciate the Department of Agriculture's (DOA) participation during the virtual stakeholder meetings held in July and November 2020. The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

Pursuant to Planning Bulletin 2019-01 Watershed Studies, we are consulting our agency partners to gather data necessary to develop the Shared Vision among stakeholders. One of our goals at this time is to determine the baseline conditions and existing environment within the study area to assist in the development of recommendations to be described in the Watershed Assessment. We invite you and other federal and state agencies, cultural organizations, local agencies, interested parties, and individuals interested in providing comments and identifying any issues or concerns to participate in this collaborative effort. We request your technical assistance in identifying any natural resources or other resources of concern subject to DOAs' purview, occurring within the study area. Any comments received will be fully considered in the development of the final Watershed Assessment. Additional study background information is provided below:

Problems by U.S. Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and

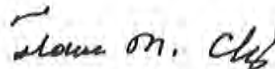
landslides. These problems pose a threat to public health and safety and the health of the environment.

Guam has two distinct geographic landscapes; Northern Guam is comprised of limestone plateau while Southern Guam contains ridgelines from volcanic rises. Problems identified in Northern Guam include threats to the Northern Lens Aquifer (main source of drinking water) from exposure to nitrates from septic tanks and land use practices, poor storm water management and infrastructure allowing point-source pollution to flow into the near shore waters. Problems identified in Southern Guam include heavy conveyance of water that carries sedimentation and pollutants to the river deltas resulting in algal blooms and coral reef decline, severe riverbank erosion resulting in loss of property and exacerbating water quality issues, lack of forested lands due to prescribed fires for development, and reforestation plans that are missing diversity of native species to reduce erosion and promote biodiversity.

The CNMI is comprised of 14 islands, of which, five are inhabited. The assessment is focused on the villages inhabiting the islands of Saipan, Tinian, and Rota. The following problems were identified through prior studies and input from CNMI stakeholders/agencies: Frequent intense rainfall events trigger flooding along watercourses and in low lying areas, causing life safety risks and economic damages, including effects to critical infrastructure (Saipan). Storms and high wave events contribute to coastal erosion, endangering critical infrastructure (Saipan and Rota). Flooding reduces water quality and water supply, leading to contaminated drinking water (Saipan, Tinian, and Rota). Wildfires exacerbated by drought and invasive species threaten the ecology (Tinian and Rota).

We appreciate your cooperation on this matter and respectfully request a response within 30 days. We will continue to coordinate this effort with you as the study progresses and the Watershed Assessment is developed. Should you have any questions, comments, or wish to request either an extension for response or a meeting to discuss this request, please contact Ms. Jessie K. Paahana, Environmental Coordinator, Civil and Public Works Branch, Honolulu District at (808) 835-4042 or e-mail: jessie.k.paahana@usace.army.mil.

Sincerely,



Florence Ching, P.E.
Acting Deputy District Engineer
Programs and Project Management

Enclosure

USACE FY 19 Emergency Supplemental Watershed Study Area Maps

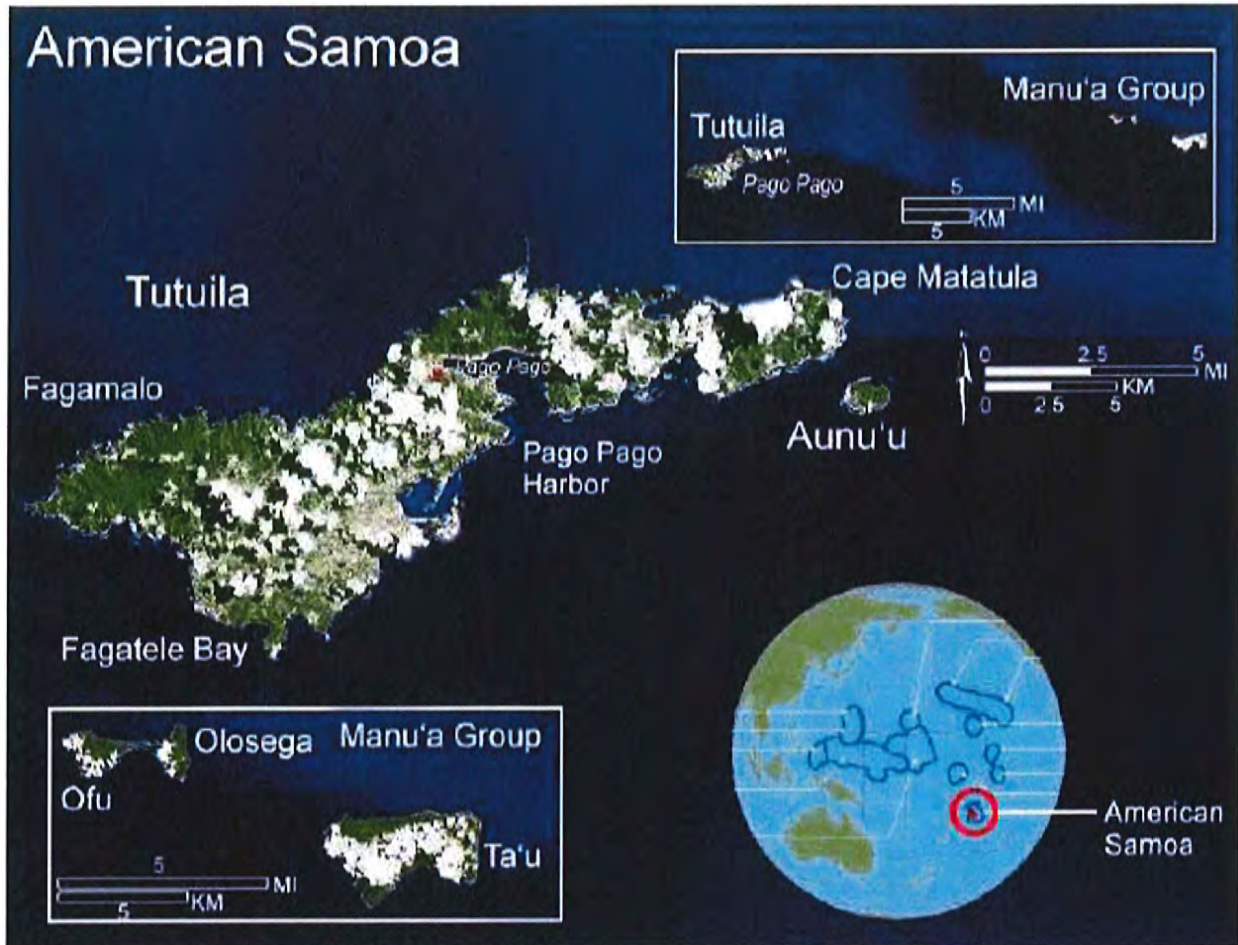


Figure 1. American Samoa Study Area

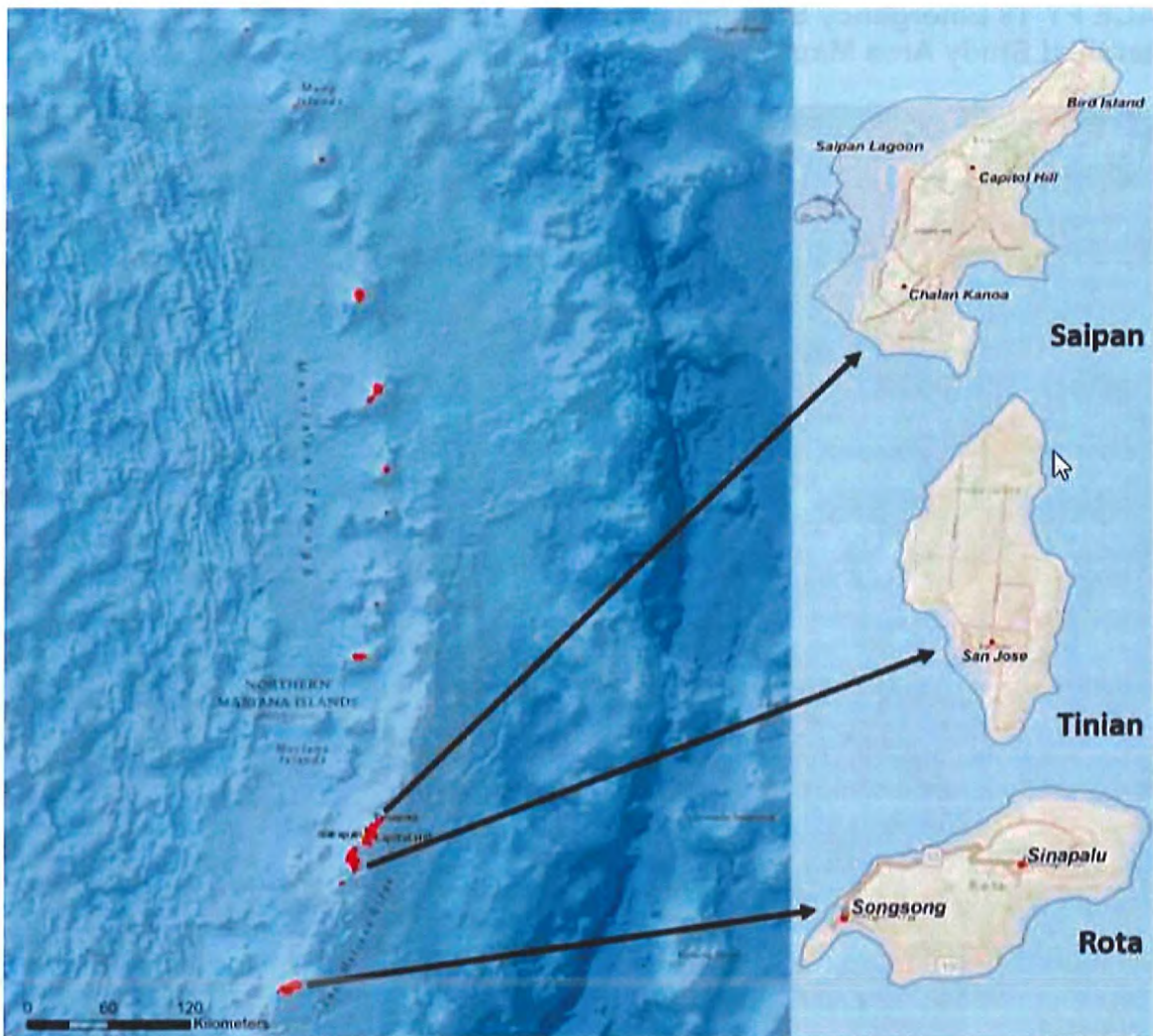


Figure 2. Commonwealth of the Northern Mariana Islands Study Area



Guam Watershed Assessment
Figure 3. Guam Study Area



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

November 13, 2020

Civil and Public Works Branch
Programs and Project Management Division

Ms. Elena Vaouli
U.S. Environmental Protection Agency
Region 9, TIP-1
75 Hawthorne Street
San Francisco, CA 94105

Dear Ms. Vaouli:

The Honolulu District, U.S. Army Corps of Engineers (Corps) is conducting Post-Disaster Watershed Assessments (assessments) for the territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), (see Enclosure). The assessments are being conducted pursuant to Section 729 of the Water Resources Development Act of 1986, as amended, and funded under the Additional Supplemental Appropriations for Disaster Relief Act of 2019 (Public Law 116-20), enacted on June 6, 2019. As authorized, these assessments will address identified water resources needs, provide a shared vision of a desired end state, and provide recommendations for potential involvement by the Corps, other federal agencies, or non-federal interests.

The study area encompasses the entire territories of American Samoa, Guam, and CNMI. The purpose of these assessments is to identify, and address community needs in each territory and increase resiliency. Typhoons and Tropical Cyclones striking the territories in 2018 led to the appropriation of disaster relief funds, received in January 2020, by the Corps. The assessments are fully federally funded and expected to be complete by 2022.

Problems by Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and landslides. These problems pose a threat to public health and safety and the health of the environment.

Guam has two distinct geographic landscapes; Northern Guam is comprised of limestone plateau while Southern Guam contains ridgelines from volcanic rises. Problems identified in Northern Guam include threats to the Northern Lens Aquifer

(main source of drinking water) from exposure to nitrates from septic tanks and land use practices, poor storm water management and infrastructure allowing point-source pollution to flow into the near shore waters. Problems identified in Southern Guam include heavy conveyance of water that carries sedimentation and pollutants to the river deltas resulting in algal blooms and coral reef decline, severe riverbank erosion resulting in loss of property and exacerbating water quality issues, lack of forested lands due to prescribed fires for development, and reforestation plans that are missing diversity of native species to reduce erosion and promote biodiversity.

The CNMI contains 14 islands, of which, five are inhabited. The assessment is focused on the villages inhabiting the islands of Saipan, Tinian, and Rota. The following problems were identified through prior studies and input from CNMI stakeholders/agencies: Frequent intense rainfall events trigger flooding along watercourses and in low lying areas, causing life safety risks and economic damages, including effects to critical infrastructure (Saipan). Storms and high wave events contribute to coastal erosion, endangering critical infrastructure (Saipan and Rota). Flooding reduces water quality and water supply, leading to contaminated drinking water (Saipan, Tinian, and Rota). Wildfires exacerbated by drought and invasive species threaten the ecology (Tinian and Rota).

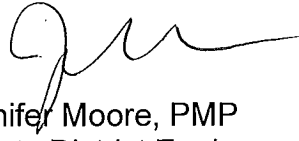
Stakeholder meetings were held virtually in July (participants included American Samoa and Guam U.S. Environmental Protection Agency (EPA)). The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

Pursuant to Planning Bulletin 2019-01 Watershed Studies, we are beginning to gather data necessary through collaboration with agency partners and stakeholders to inform preparation of the Shared Vision Milestone. One of our goals at this time is to determine the baseline conditions and existing environment within the study area. Determining the existing conditions and objectives collaboratively will assist in the development of recommendations described in the Watershed Assessment. We invite you and other Federal and State agencies, cultural organizations, local agencies, interested parties, and individuals interested in providing comments and identifying any issues or concerns to participate in this collaborative effort. We request your assistance in identifying any natural resources or other resources of concern occurring within the study area. Additionally, we welcome any information you may possess regarding the existing environment within the study area. Any comments received will be fully considered in the development of the final Watershed Assessment.

We appreciate your cooperation on this matter and respectfully request a response within 30 days. We will continue to coordinate this effort with you as the study

progresses and the Watershed Assessment is developed. Should you have any questions, comments, or wish to request either an extension for response or a meeting to discuss this request, please contact Ms. Jessie K. Paahana, Environmental Coordinator, Civil and Public Works Branch, Honolulu District at (808) 835-4042 or e-mail: jessie.k.paahana@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jennifer Moore', with a long horizontal flourish extending to the right.

Jennifer Moore, PMP
Deputy District Engineer
Programs and Project Management

Enclosure

**USACE FY 19 Emergency Supplemental
Watershed Study Area Maps**

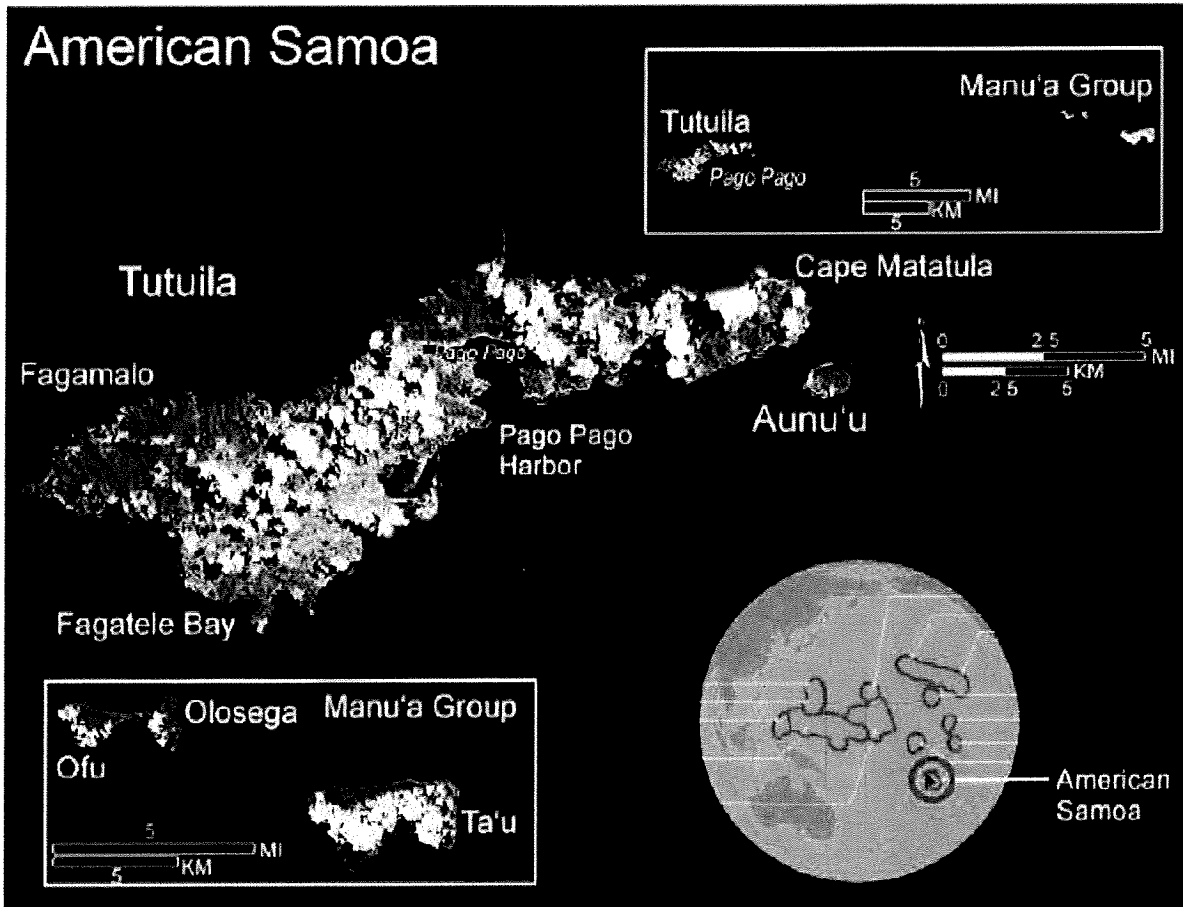


Figure 1. American Samoa Study Area

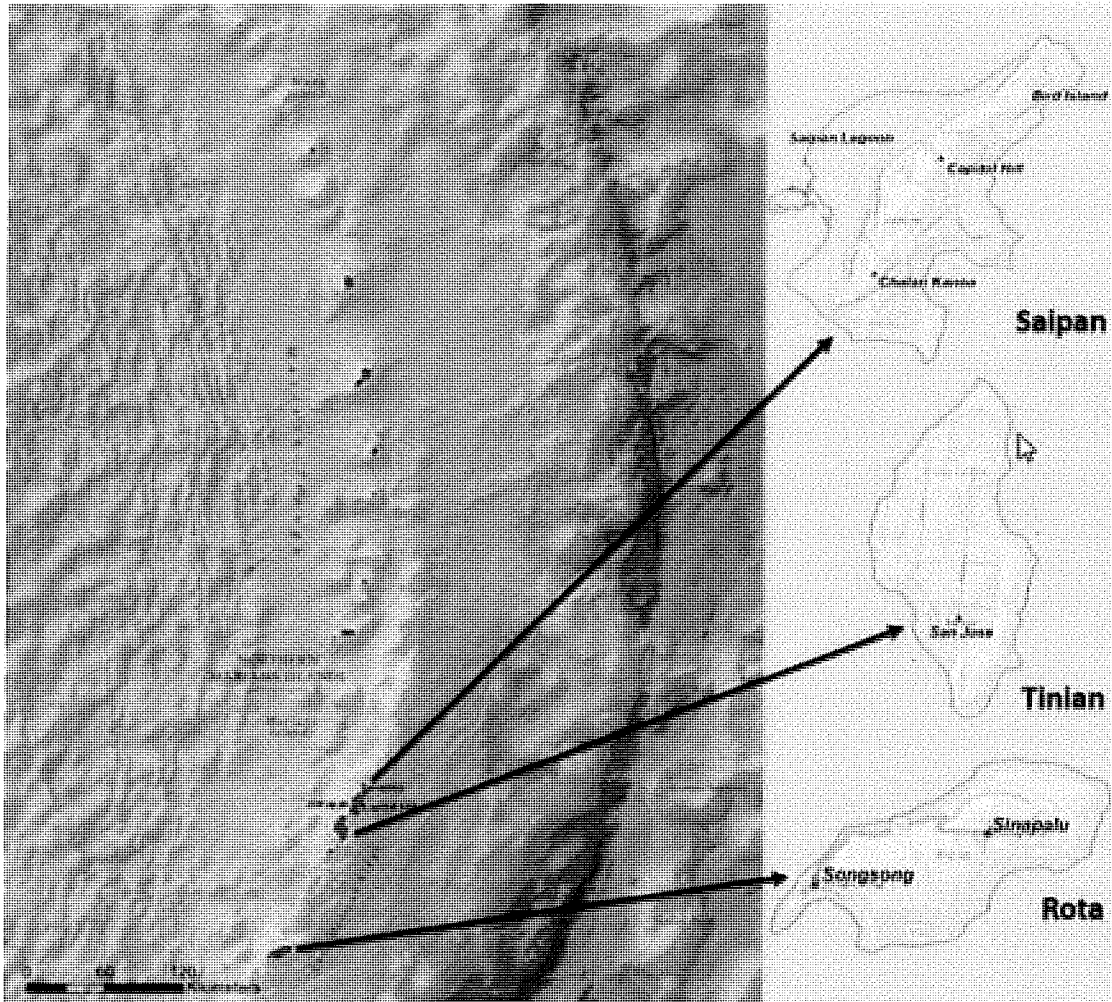
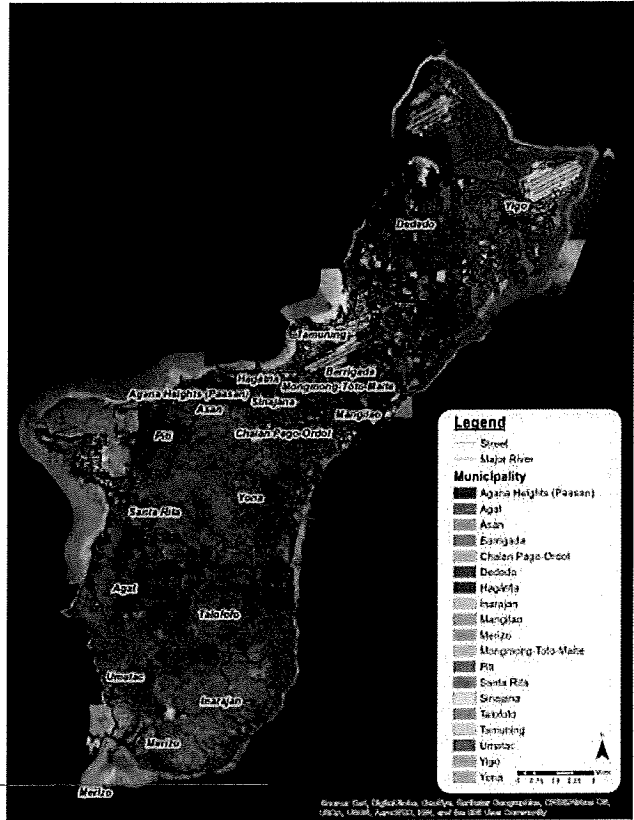
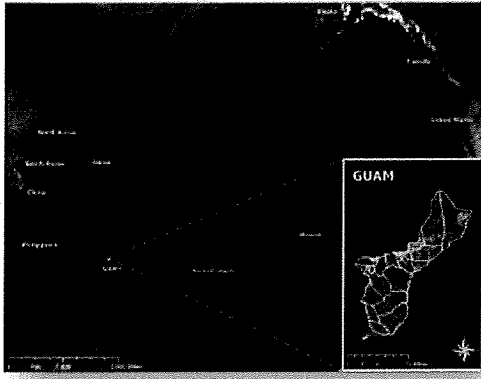


Figure 2. Commonwealth of the Northern Mariana Islands Study Area



Guam Watershed Assessment
Figure 3. Guam Study Area



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

December 8, 2020

Civil and Public Works Branch
Programs and Project Management Division

Mr. Aaron Nadig
Island Team Manager
Pacific Islands Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96850

Dear Mr. Nadig:

The Honolulu District, U.S. Army Corps of Engineers (Corps) is conducting Post-Disaster Watershed Assessments (assessments) for the territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), (see Enclosure). The assessments are being conducted pursuant to Section 729 of the Water Resources Development Act of 1986, as amended, and funded under the Additional Supplemental Appropriations for Disaster Relief Act of 2019 (Public Law 116-20), enacted on June 6, 2019. As authorized, these assessments will address identified water resources needs, provide a shared vision of a desired end state, and provide recommendations for potential involvement by the Corps, other federal agencies, or non-federal interests.

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Problems by Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and landslides. These problems pose a threat to public health and safety and the health of the environment.

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Stakeholder meetings were held virtually in July (participants included American Samoa, CNMI and Guam FWS personnel). The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

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We appreciate your cooperation on this matter and respectfully request a response within 30 days. We will continue to coordinate this effort with you as the study progresses and the assessment is developed. Should you have any questions, comments, or wish to request either an extension for response or a meeting to discuss this request, please contact Ms. Jessie K. Paahana, Environmental Coordinator, Civil and Public Works Branch, Honolulu District at (808) 835-4042 or e-mail: jessie.k.paahana@usace.army.mil.

Sincerely,



Jennifer Moore, PMP
Deputy District Engineer
Programs and Project Management

Enclosure

USACE FY 19 Emergency Supplemental Watershed Study Area Maps

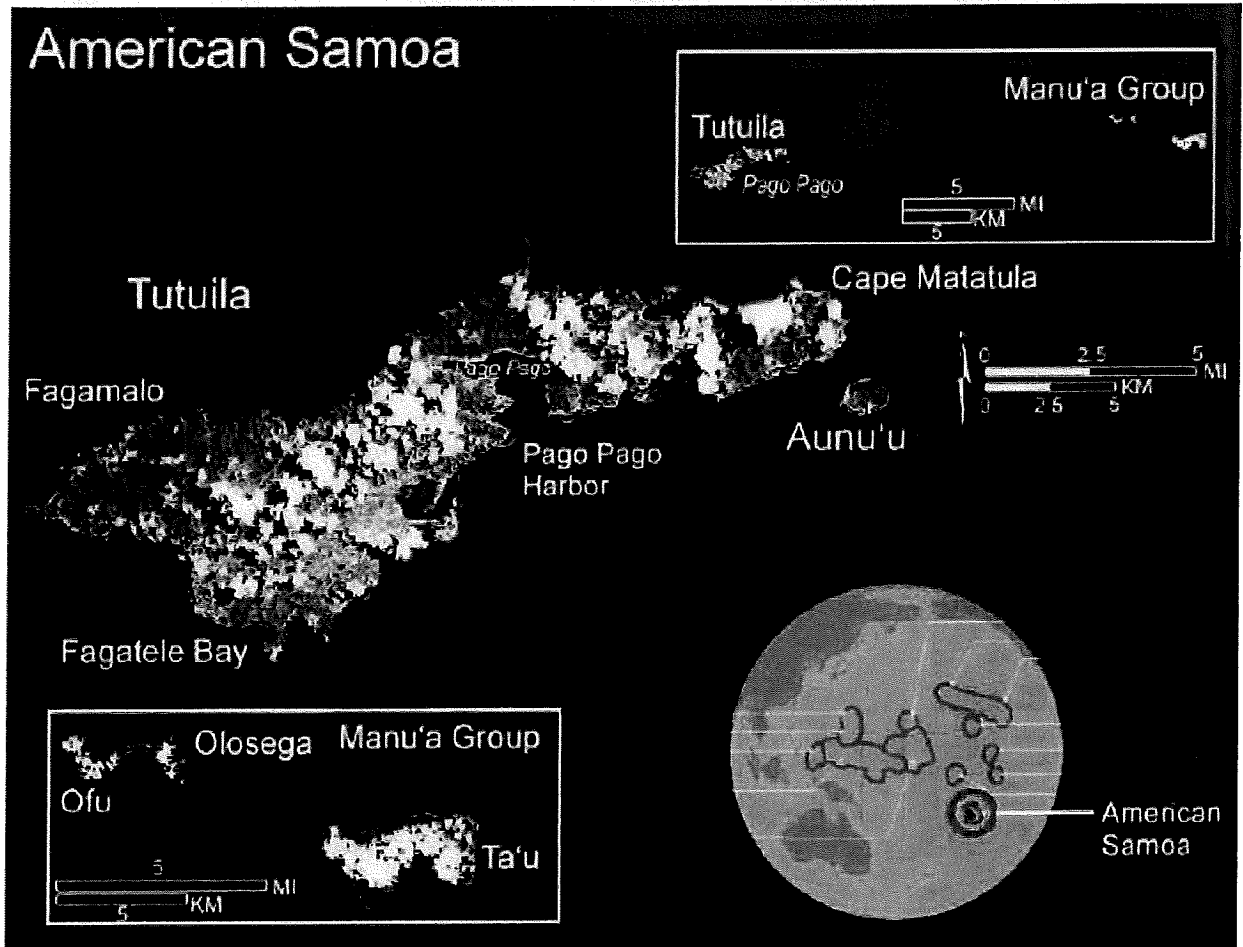


Figure 1. American Samoa Study Area

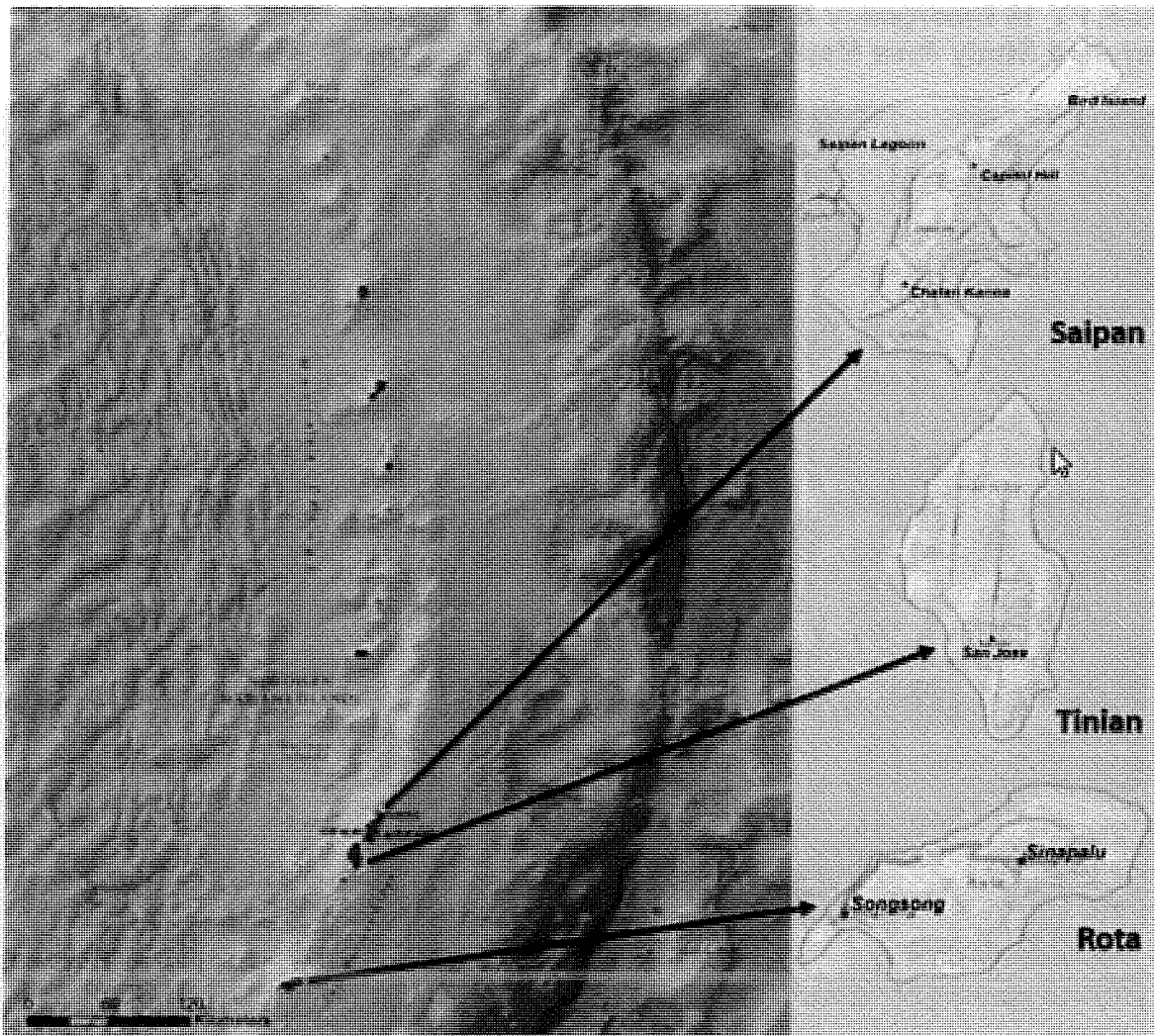
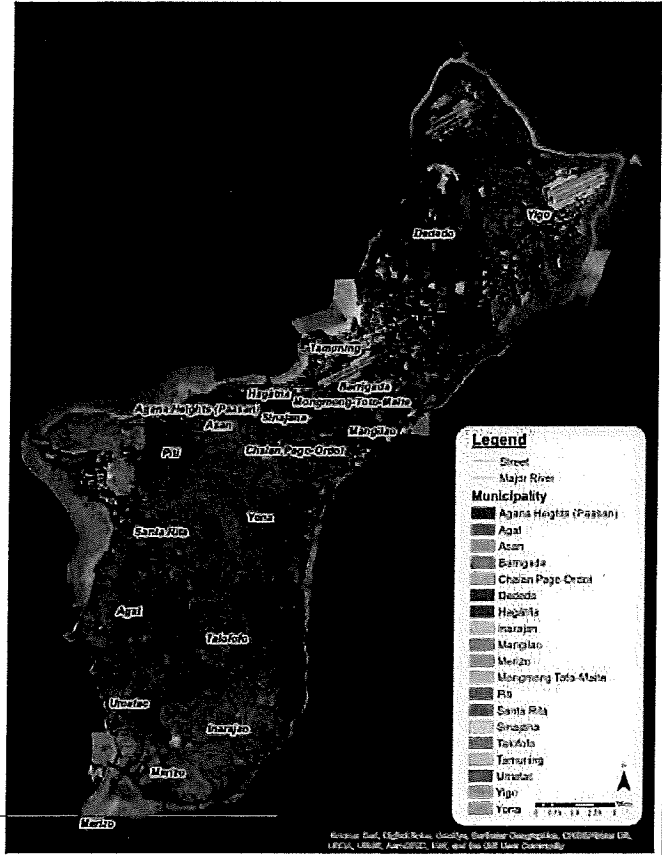
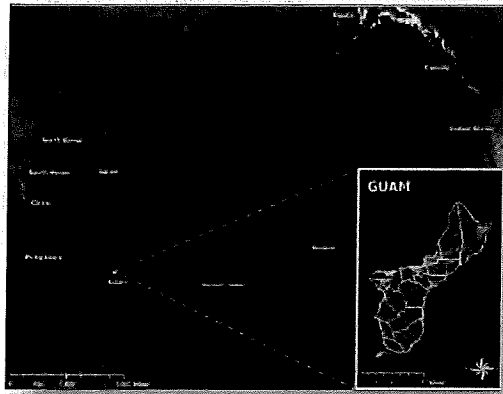


Figure 2. Commonwealth of the Northern Mariana Islands Study Area



Guam Watershed Assessment
Figure 3. Guam Study Area



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

December 10, 2020

Civil and Public Works Branch
Programs and Project Management Division

Ms. Ann Garrett, Protected Resources Division
Mr. Gerry Davis, Habitat Conservation Division

Pacific Islands Regional Office
National Marine Fisheries Service
1845 Wasp Boulevard, Building 176
Honolulu, HI 96818

Dear Ms. Garrett and Mr. Davis:

The Honolulu District, U.S. Army Corps of Engineers (Corps) is conducting Post-Disaster Watershed Assessments (assessments) for the territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), (see Enclosure). The assessments are being conducted pursuant to Section 729 of the Water Resources Development Act of 1986, as amended, and funded under the Additional Supplemental Appropriations for Disaster Relief Act of 2019 (Public Law 116-20), enacted on June 6, 2019. As authorized, these assessments will address identified water resources needs, provide a shared vision of a desired end state, and provide recommendations for potential involvement by the Corps, other federal agencies, or non-federal interests.

The study area encompasses the entire territories of American Samoa, Guam, and CNMI. The purpose of these assessments is to identify, and address community needs in each territory and increase resiliency. In response to typhoons and tropical cyclones striking the territories in 2018, the Corps received disaster relief funds in January 2020. The assessments are fully federally funded and expected to be complete by 2022.

Problems by Territory

American Samoa has a history of chronic riverine and coastal flooding from convective storms, cyclones and tsunamis. Problems associated with these floods include damages resulting from run off and ponding of water, shoreline erosion, water quality and water supply contamination, and landslides. These problems pose a threat to public health and safety and the health of the environment.

Guam has two distinct geographic landscapes; Northern Guam is comprised of limestone plateau while Southern Guam contains ridgelines from volcanic rises.

Problems identified in Northern Guam include threats to the Northern Lens Aquifer (main source of drinking water) from exposure to nitrates from septic tanks and land use practices, poor storm water management and infrastructure allowing point-source pollution to flow into the near shore waters. Problems identified in Southern Guam include heavy conveyance of water that carries sediment and pollutants to the river deltas, resulting in algal blooms and coral reef decline, severe riverbank erosion resulting in loss of property and exacerbating water quality issues, lack of forested lands due to prescribed fires for development, and reforestation plans that are missing diversity of native species to reduce erosion and promote biodiversity.

The CNMI contains 14 islands, of which, five are inhabited. The assessment is focused on the villages on the islands of Saipan, Tinian, and Rota. The following problems were identified through prior studies and input from CNMI stakeholders/agencies: Frequent intense rainfall events trigger flooding along watercourses and in low lying areas, causing life safety risks and economic damages, including effects to critical infrastructure (Saipan). Storms and high wave events contribute to coastal erosion, endangering critical infrastructure (Saipan and Rota). Flooding reduces water quality and water supply, leading to contaminated drinking water (Saipan, Tinian, and Rota). Wildfires exacerbated by drought and invasive species threaten the ecology (Tinian and Rota).

Stakeholder meetings were held virtually in July (participants included American Samoa and Guam NMFS). The team will continue to collaborate with stakeholders and review existing resiliency projects to identify the problems and develop community-based mitigation strategies for flood risk. The assessments are still in the early data gathering phase; no specific decisions have been made. The next major milestone is the Shared Vision Milestone, scheduled for January 2021.

Pursuant to Planning Bulletin 2019-01 Watershed Studies, we are consulting our agency partners to gather data necessary to develop the Shared Vision among stakeholders. One of our goals at this time is to determine the baseline conditions and existing environment within the study area to assist in the development of recommendations to be described in the assessment. We invite you and other Federal and State agencies, cultural organizations, local agencies, interested parties, and individuals interested in providing comments and identifying any issues or concerns to participate in this collaborative effort. In particular we request your technical assistance in identifying any natural resources or other resources of concern subject to NMFS' purview occurring within the study area. Any comments received will be fully considered in the development of the final Watershed Assessment.

We appreciate your cooperation on this matter and respectfully request a response within 30 days. We will continue to coordinate this effort with you as the study progresses and the assessment is developed. Should you have any questions, comments, or wish to request either an extension for response or a meeting to discuss

this request, please contact Ms. Jessie K. Paahana, Environmental Coordinator, Civil and Public Works Branch, Honolulu District at (808) 835-4042 or e-mail: jessie.k.paahana@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer Moore". The signature is fluid and cursive, with a large initial "J" and "M".

Jennifer Moore, PMP
Deputy District Engineer
Programs and Project Management

Enclosure

USACE FY 19 Emergency Supplemental Watershed Study Area Maps

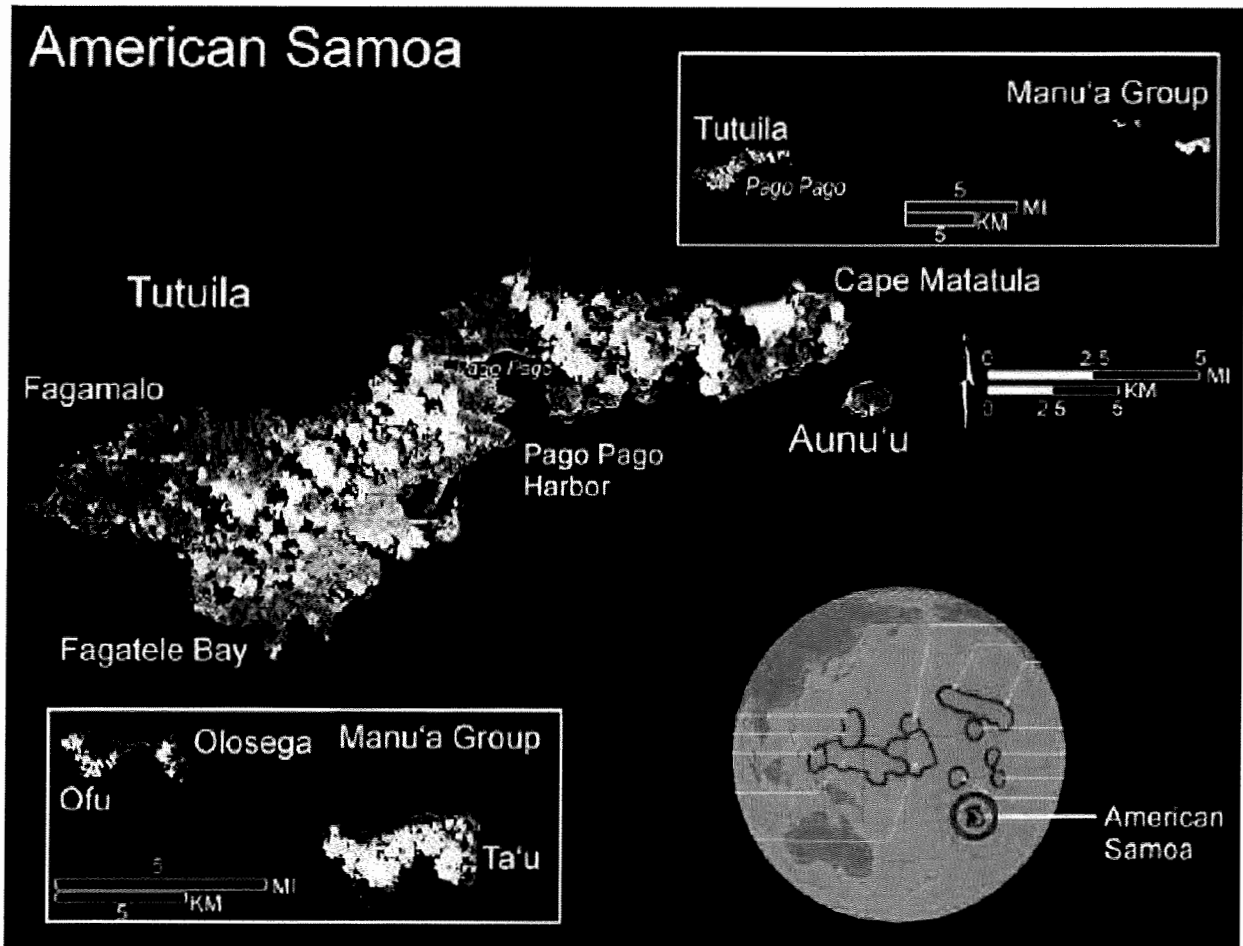


Figure 1. American Samoa Study Area

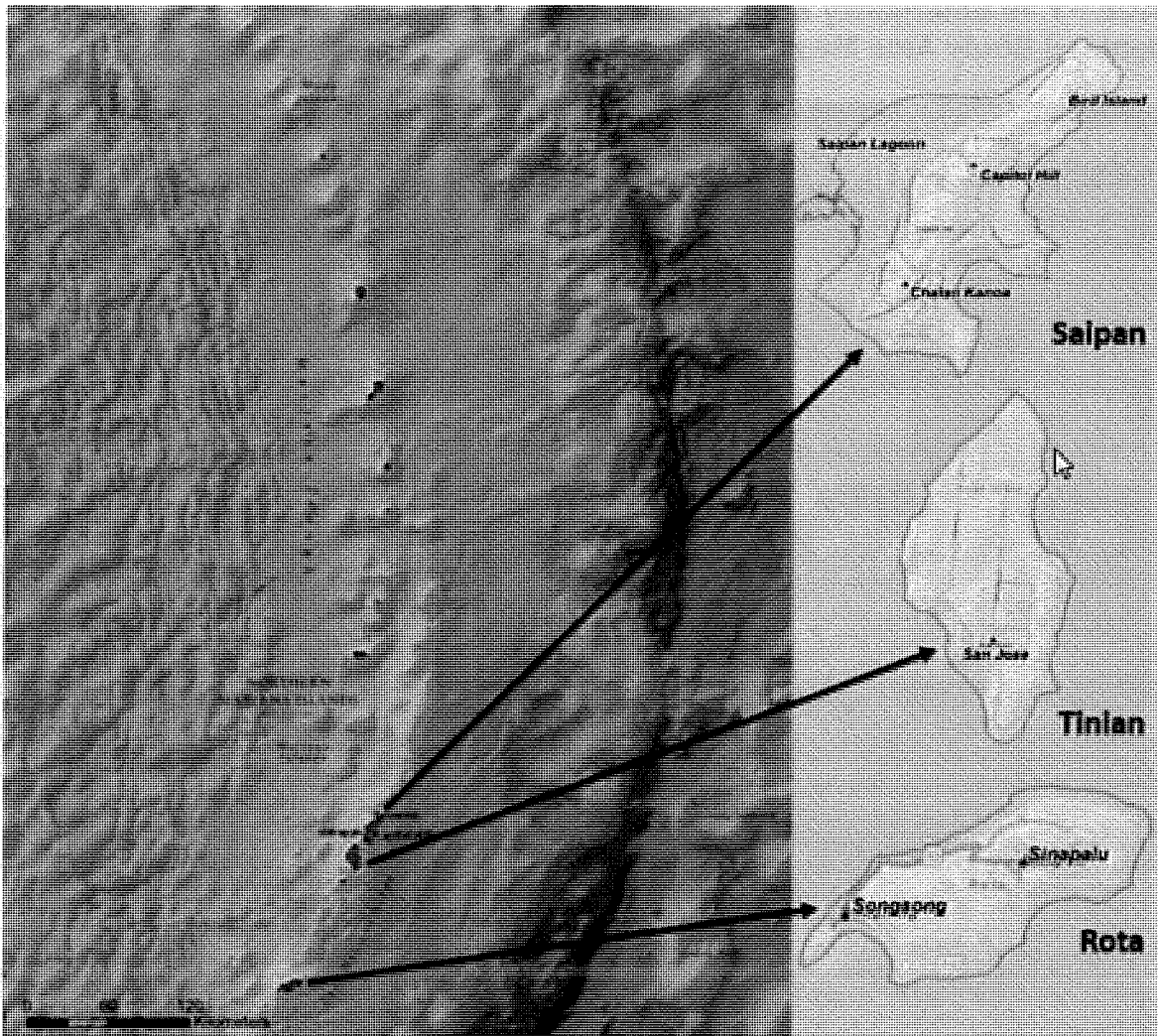
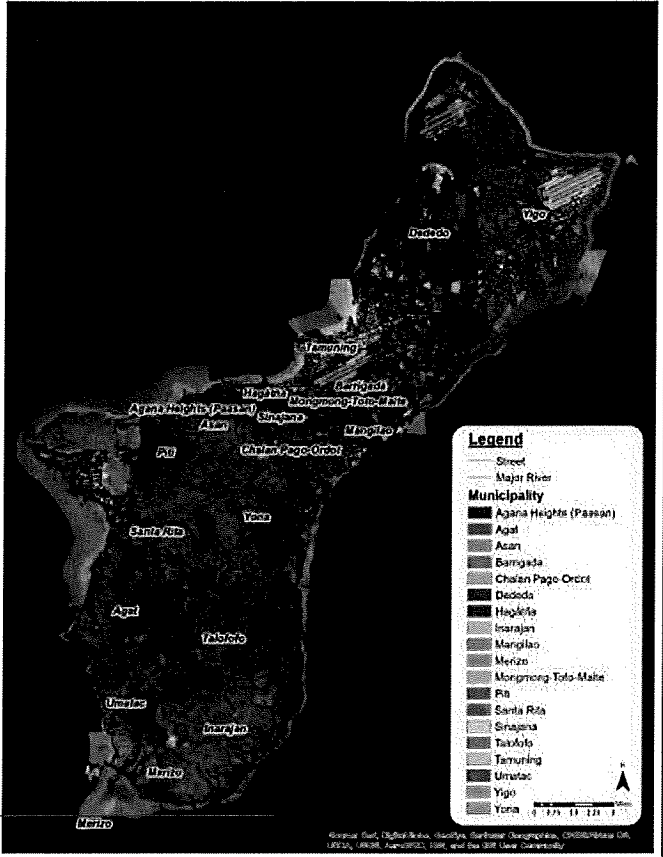
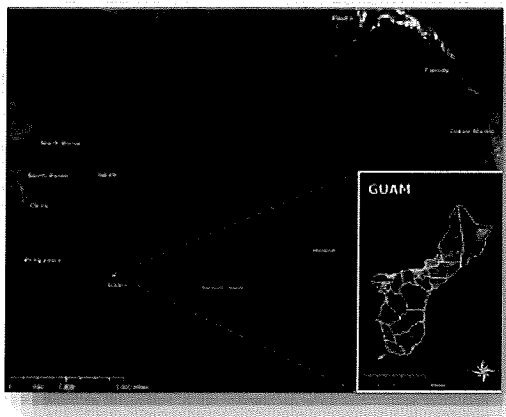


Figure 2. Commonwealth of the Northern Mariana Islands Study Area



Guam Watershed Assessment
 Figure 3. Guam Study Area

The Commonwealth of the Northern Mariana Islands

Final Watershed Plan

APPENDIX A - Attachment 2

Letters of Support

July 2022



**US Army Corps
of Engineers**®
Honolulu District





Eli D. Cabrera
Administrator

Commonwealth of the Northern Mariana Islands
OFFICE OF THE GOVERNOR
Bureau of Environmental and Coastal Quality
Division of Coastal Resources Management
P.O. Box 501304, Saipan, MP 96950
Tel: (670) 664-8300; Fax: (670) 664-8315
www.dcrm.gov.mp



Richard V. Salas
Director, DCRM

June 01, 2022

Ref. No: PLN22-116

Lieutenant Colonel Eric S. Marshall
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

RE: The Commonwealth of the Northern Mariana Islands (CNMI) Post-Disaster Watershed Plan, Section 729 Study

Dear Lieutenant Colonel Marshall,

This letter is to express the CNMI Bureau of Environmental and Coastal Quality-Division of Coastal Resources Management's (BECQ-DCRM) support for the broad recommendations and proposed collaboration with the U.S. Army Corps of Engineers, Honolulu District, as a partner in furthering the recommendations made within the CNMI Post-Disaster Watershed Plan. We understand this study assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami related problems in the CNMI. By analyzing the risk and uncertainty of stressors, the U.S. Army Corps of Engineers identified potential opportunities to leverage collaborative risk reduction strategies and increase resilience to future hazards.

DCRM shares the goals of increasing resilience to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, and inland ecosystems. Our agency expresses general support for the recommendations set forth in the CNMI Post-Disaster Watershed Plan. We acknowledge that this letter is nonbinding and look forward to future collaboration to further the recommendations.

Please coordinate with the DCRM Planning section if you have any questions or concerns. The members of the planning team can be reached at planning@dcrm.gov.mp.

Sincerely,

RICHARD V. SALAS

Director

Division of Coastal Resources Management



RALPH DLG. TORRES
GOVERNOR

ARNOLD I. PALACIOS
LIEUTENANT GOVERNOR

COMMONWEALTH of the NORTHERN MARIANA ISLANDS
OFFICE OF THE GOVERNOR
OFFICE OF PLANNING & DEVELOPMENT



A. KODEP OGUMORO-ULUDONG
DIRECTOR

CHRISTOPHER A. CONCEPCION
DEPUTY DIRECTOR

June 29, 2022

Elise Jarrett
Water Resources Planner
U.S. Army Corps of Engineers
1325 J Street
Sacramento, CA 95814

Sent via email: elise.m.jarrett@usace.army.mil

Re: Comments on CNMI Post Disaster Watershed Assessment Report, Section 729 Study

Dear Ms. Jarrett,

The Office of Planning and Development (OPD) appreciates the U.S. Army Corps of Engineers' (USACE) ongoing engagement and support in the development of the Post Disaster Watershed Assessment Report (WA Report) for the Commonwealth of the Northern Mariana Islands (CNMI). We have received and reviewed the revised document and appreciate your efforts to address the comments that were provided. The purpose of this study was to assist with future decision-making and strategic planning in CNMI to rehabilitate and improve the resiliency of infrastructure and natural resources, while reducing risks to human life and property from future natural hazards. This comprehensive document incorporates the best available scientific literature and robust stakeholder engagement across local and federal stakeholders. This letter is to acknowledge receipt and express gratitude to USACE and support of the recommendations set forth in the CNMI Post-Disaster Watershed Plan, Section 729 Study.

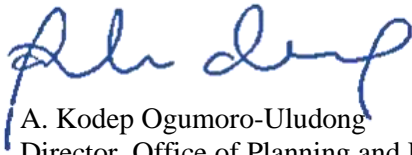
The WA Report assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami related problems in the CNMI. By analyzing best available data regarding the current state of our resources as well as the risk and uncertainty of stressors, USACE identified potential opportunities to leverage collaborative risk reduction strategies and increase resilience to future hazards. The report included actionable recommendations for near-term activities to fill data gaps and support hazard risk reduction priorities with a focus on watershed management opportunities. It also highlights numerous opportunities for cross-cutting planning and capacity building initiatives that can fulfil multiple mitigation objectives, ranging from emergency preparedness and ecosystem restoration to resource risk reduction through fire and flood prevention, and including education and outreach. Recommendations align with many ongoing activities that include enhancing stormwater management, restoring natural habitat, and supporting community engagement. The discussion of costs and potential funding and partners will be especially helpful as the CNMI works to expand on existing initiatives to incorporate watershed-level disaster management planning initiatives.

This document meets USACE's mandate to assess water resource needs and support sustainable resource management planning while taking into consideration environmental protection, economic development, and social well-being, and also aligns with parallel CNMI planning requirements and objectives. We recognize that due to authorization and scope limitations the analysis in this study did not include groundwater resources and that additional data collection would support more robust island- and watershed-level management efforts. The CNMI will continue to work with our local and federal partners to collect and analyze data to inform ongoing resource management planning updates. Overall, the analysis and recommendations provided here offer important insights into watershed management and disaster risk reduction priorities that will contribute to comprehensive planning updates.

As reflected in the Comprehensive Sustainable Development Plan (CSDP), OPD, the Planning and Development Advisory Council, and our planning partners share the goals of increasing resilience across resources and sectors. These goals, objectives, and implementation actions are consistent with the recommendations set forth in the WA Report and will be incorporated as appropriate into updates to the CNMI's Resources Report and CSDP revisions. We look forward to continuing collaboration and partnership to address data gaps and support priority action items, as well as ongoing information sharing and capacity building that will enable CNMI to better achieve more sustainable growth and watershed management, now and for the future.

Thank you for your hard work on this assessment and for your ongoing support.

Sincerely,



A. Kodep Ogumoro-Uludong
Director, Office of Planning and Development

CC: Governor Ralph DLG. Torres
Chief of Staff Wil Castro
CBMA Special Assistant Glenna Palacios
DCRM Director Rich Salas
Planning and Development Advisory Council
Infrastructure and Recovery Program Coordinator Marianne Teregeyo



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

In Reply Refer to:

01EPIF00- 2022-0049223

Lieutenant Colonel Eric S. Marshall
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

Subject: The Commonwealth of the Northern Mariana Islands (CNMI) Post-Disaster Watershed Plan, Section 729 Study

Lieutenant Colonel Marshall:

This letter is to express the U.S. Fish and Wildlife's (Service) support for the general recommendations and proposed collaboration with the U.S. Army Corps of Engineers, Honolulu District, as a partner in furthering the recommendations made within the CNMI Post-Disaster Watershed Plan. We understand this study assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami related problems in the CNMI. By analyzing the risk and uncertainty of stressors, the U.S. Army Corps of Engineers identified potential opportunities to leverage collaborative risk reduction strategies and increase resilience to future hazards.

The Service shares the goals of increasing resiliency of the Islands to tropical storms and typhoons, coastal hazards, water quality and quantity, inland ecosystems, and/or tsunami and expresses general support for the recommendations set forth in the CNMI Post-Disaster Watershed Plan. The Service acknowledge that this letter is nonbinding and look forward to future collaboration to further the recommendations.

Thank you for coordinating with our office for the furtherance of habitat conservation and resiliency. The Service has designated Tyler Willsey, Fish and Wildlife Biologist based on Saipan as the point of contact for this study. Tyler can be reached via email at tyler_willsey@fws.gov.

Sincerely,

JACQUELINE
E FLORES
Jacqueline Flores
Mariana Islands Team Manager

Digitally signed by
JACQUELINE FLORES
Date: 2022.06.02
13:48:57 +10'00'

PACIFIC REGION 1

IDAHO, OREGON*, WASHINGTON,
AMERICAN SĀMOA, GUAM, HAWAI'I, NORTHERN MARIANA ISLANDS

*PARTIAL



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 9
75 Hawthorne Street
San Francisco, California 94105-3901

Mail Code: WTR-3-3

30 May 2022

Lieutenant Colonel Eric S. Marshal
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

RE: The Commonwealth of the Northern Mariana Islands (CNMI) Post-Disaster Watershed Plan,
Section 729 Study

Lieutenant Colonel Marshall:

This letter is to express the U.S. Environmental Protection Agency's (EPA) support for the broad recommendations and proposed collaboration with the U.S. Army Corps of Engineers, Honolulu District, as a partner in furthering the recommendations made within the CNMI Post-Disaster Watershed Plan. We understand this study assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami related problems in the CNMI. By analyzing the risk and uncertainty of stressors, the U.S. Army Corps of Engineers identified potential opportunities to leverage collaborative risk reduction strategies and increase resilience to future hazards.

EPA shares the goals of increasing resilience to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, and inland ecosystems and expresses general support for the recommendations set forth in the CNMI Post-Disaster Watershed Plan. We acknowledge that this letter is nonbinding and look forward to future collaboration to further the recommendations.

EPA has designated Tom Konner – 415-972-3408 – konner.thomas@epa.gov as the point of contact for this study.

Respectfully,

THOMAS KONNER
Digitally signed by
THOMAS KONNER
Date: 2022.05.31
20:57:37 -07'00'

Tom Konner
Pacific Island Territories Infrastructure Team Lead
U.S. EPA Region IX



FEMA

May 20, 2022

Lieutenant Colonel Eric S. Marshall
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

Reference: The Commonwealth of the Northern Mariana Islands (CNMI) Post-Disaster
Watershed Plan, Section 729 Study

Dear Lieutenant Colonel Marshall:

This letter is to express Federal Emergency Management Agency (FEMA) support for the broad recommendations and proposed collaboration with the U.S. Army Corps of Engineers, Honolulu District, as a partner in furthering the recommendations made within the CNMI Post-Disaster Watershed Plan. We understand this study assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami related problems in the CNMI. By analyzing the risk and uncertainty of stressors, the U.S. Army Corps of Engineers identified potential opportunities to leverage collaborative risk reduction strategies and optimize resiliency from a multi-objective system perspective.

FEMA expresses support for the recommendations set forth in the CNMI Post-Disaster Watershed Plan and will collaborate in the advancement and application of the strategies pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and/or tsunami.

FEMA Region 9 has designated Jennifer Monroe, Risk Analyst as the point of contact for this project. She can be contacted by email at Jennifer.Monroe@Fema.dhs.gov or by phone at (202) 717-5975.

Sincerely,

KATHRYN J LIPIECKI

Digitally signed by KATHRYN J
LIPIECKI
Date: 2022.05.20 13:50:10 -07'00'

Kathryn Lipiecki
Director, Mitigation Division
FEMA Region 9

Cc: Michael Bishop, Acting Chief, Risk Analysis Branch



Department of Energy

1000 Independence Ave., SW
Washington, DC 20585

June 1, 2022

Lieutenant Colonel Eric S. Marshall
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

RE: The Commonwealth of the Northern Mariana Islands (CNMI) Post-Disaster Watershed Plan, Section 729 Study

Lieutenant Colonel Marshall:

This letter is to express the U.S. Department of Energy's support for the broad recommendations and proposed collaboration with the U.S. Army Corps of Engineers, Honolulu District, as a partner in furthering the recommendations made within the CNMI Post-Disaster Watershed Plan. We understand this study assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami related problems in the CNMI. By analyzing the risk and uncertainty of stressors, the U.S. Army Corps of Engineers identified potential opportunities to leverage collaborative risk reduction strategies and increase resilience to future hazards.

The U.S. Department of Energy shares the goals of increasing energy system resilience in the CNMI and expresses general support for the recommendations set forth in the CNMI Post-Disaster Watershed Plan. We acknowledge that this letter is nonbinding and look forward to future collaboration to further the recommendations.

The U.S. Department of Energy has designated Rebecca Asch, CNMI Recovery Coordinator, (240) 306-7290 as the point of contact for this study.

Sincerely,

A handwritten signature in black ink, appearing to be "RA", written over a light gray rectangular background.

Rebecca Asch
CNMI Recovery Coordinator
U.S. Department of Energy



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office for Coastal Management
2234 South Hobson Avenue
Charleston, South Carolina 29405-2413

June 3, 2022

Lieutenant Colonel Eric S. Marshall
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

RE: Commonwealth of the Northern Mariana Islands Post-Disaster Watershed Plan, Section 729 Study

Dear Colonel Marshall:

This letter expresses the NOAA Office for Coastal Management's support for the broad recommendations and proposed collaboration with the U.S. Army Corps of Engineers, Honolulu District, as a partner in furthering the recommendations made within the Commonwealth of the Northern Mariana Islands Post-Disaster Watershed Plan. We understand this study assessed the scope pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, habitat and ecosystems, rainfall, and tsunami efforts in the Commonwealth of the Northern Mariana Islands by analyzing risk and uncertainty of stressors. The study also identified potential solutions and opportunities to leverage collaborative risk reduction strategies and optimize resiliency from a multi-objective system perspective.

NOAA's Office for Coastal Management expresses support for the recommendations set forth in the Commonwealth of the Northern Mariana Islands Post-Disaster Watershed Plan and will collaborate, as resources permit, in the advancement and application of the strategies pertaining to coastal hazards and community resilience.

I have designated Jean Tanimoto, regional director, Pacific Islands region, as the point of contact for this project. She may be reached at *Jean.Tanimoto@noaa.gov* or at (808) 725-5253.

Sincerely,

A handwritten signature in cursive script that reads "Jeffrey L. Payne".

Jeffrey L. Payne, Ph.D.
Director
NOAA Office for Coastal Management



Commonwealth of the Northern Mariana Islands
Division of Historic Preservation
Department of Community & Cultural Affairs
Cactus St. Bldgs. A-15 & A-16 Garapan
Caller Box 10007
Saipan, MP 96950



Serial No. 35100

TEL: 664-2120-25

June 3, 2022

Lieutenant Colonel Eric S. Marshall
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

RE: The Commonwealth of the Northern Marianas (CNMI) Post-Disaster Watershed Plan, Section 729 Study

Hafa adai and Tiróów Lieutenant Colonel Marshall,

This letter is to express the CNMI Historic Preservation Office's support for the broad recommendations and proposed collaboration with the U.S. Army Corps of Engineers, Honolulu District, as a partner in furthering recommendations made within the CNMI Post-Disaster Watershed Plan. We understand this study assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami-related problems in the CNMI. By analyzing the risk and uncertainty of stressors, the U.S. Army Corps of Engineers identified potential opportunities to leverage collaborative risk reduction strategies and increase resilience to future hazards.

HPO shares the goals of increasing resilience to tropical storms and typhoons, coastal hazards, freshwater hazards, inland ecosystems, and tsunamis and expresses general support for the recommendations set forth in the CNMI Post-Disaster Watershed Plan. We acknowledge that this letter is nonbinding and look forward to future collaboration to further the recommendations.

Please continue to include me as the point of contact for the CNMI Historic Preservation Office.

Thank you for your efforts to ensure the preservation of significant historic properties in the CNMI.

Sincerely,

Rita Chong
Dela Cruz
Digitally signed by
Rita Chong-Dela Cruz
Date: 2022.06.03
13:52:42 +10'00'
CNMI State Historic Preservation Officer



June 1, 2022

Lieutenant Colonel Eric S. Marshall
District Commander
U.S. Army Corps of Engineers, Honolulu District
Fort Shafter, HI 96858

RE: The Commonwealth of the Northern Mariana Islands (CNMI) Post-Disaster Watershed Plan,
Section 729 Study

Lieutenant Colonel Marshall:

This letter is to confirm NRCS's data in the U.S. Army Corps of Engineers, Honolulu District, CNMI Post-Disaster Watershed Plan. We understand this study assessed the scope and identified potential solutions pertaining to tropical storms and typhoons, coastal hazards, water quality and quantity, freshwater hazards, inland ecosystems, and tsunami related problems in the CNMI. It also identified potential opportunities to leverage collaborative risk reduction strategies and increase resilience to future hazards.

NRCS's mission is to deliver conservation solutions for agricultural producers can protect natural resources and feed a growing world and vision of resilient islands with clean and abundant water, healthy soils, and thriving agricultural communities align with the plan's goals of increasing resilience to climate change and natural disasters. We acknowledge that the information provided in this report regarding NRCS's programs and assistance is accurate.

NRCS has designated Pamela Sablan, District Conservationist, (670) 233-3415 x,103 as the point of contact for questions regarding NRCS assistance in CNMI.

Sincerely,

J.B. MARTIN
Acting Director
Pacific Islands Area

cc: John Mathews, Assistant Director for Engineering, USDA NRCS, PIA State Office
Elise Jarrett, Water Resources Planner, U.S. Army Corps of Engineers

Natural Resources Conservation Service
Pacific Islands Area
P.O. Box 50004 Rm. 4-118
Honolulu HI 96850-0050
808-600-2911

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The Commonwealth of the Northern Mariana Islands

Final Watershed Plan

APPENDIX A - Attachment 3

Stakeholder Meeting # 6 – Annotated Slide Deck

July 2022



**US Army Corps
of Engineers**®
Honolulu District



Commonwealth of the Northern Mariana Islands (CNMI)

POST-DISASTER WATERSHED ASSESSMENT

WATER & POWER INTERAGENCY WORKING GROUP

JULY 8, 2021



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



**US Army Corps
of Engineers.**



AGENDA

- I. Introductions in Chat – All
- II. Water & Power Working Group Overview – USACE
- III. Exercise: Risk Assessment – All
- IV. Closing Remarks – USACE



WATER & POWER WORKING GROUP

Purpose:

- Engage in interagency discussions relating to water and power resiliency in CNMI.
- Create interagency alignment on ongoing and planned efforts.
- Leverage Federal resources to achieve meaningful recovery.



Frequency: Monthly



EXERCISE: RISK ASSESSMENT

Purpose:

- Obtain agency input on:
 1. Prioritization of problem stressors, and
 2. Types of solutions to recommend

Overview:

- Four focus areas (i.e. the overarching problems) and their stressors have been identified. Using the "annotation" function in Webex, partners can rank each stressor in terms of probability and consequence, to help USACE gage the level of risk.
- Partners will then provide input on which types of solutions should be applied for each focus area.



EXERCISE: RISK ASSESSMENT

Focus Areas & Stressors:

1. Water Quality and Supply

- Saltwater intrusion
- Water leaks in distribution system
- Unmetered water use
- Over pumping of GW
- Drought
- Contaminants in GW
- Untreated runoff
- Seepage from leaking septic tanks

2. Tropical Cyclones

- Loss of power
- Flash flooding
- Coastal flooding
- Severe winds

3. Coastal Hazards

- Increasing water temperatures
- Coral bleaching
- Sea level rise
- Water quality impairments
- Poor land use practices
- Erosion
- Sedimentation
- Surface runoff

4. Ecological Threats

- Invasive species
- Wildfires
- Poor land use practices

HOW TO ANNOTATE IN WEBEX



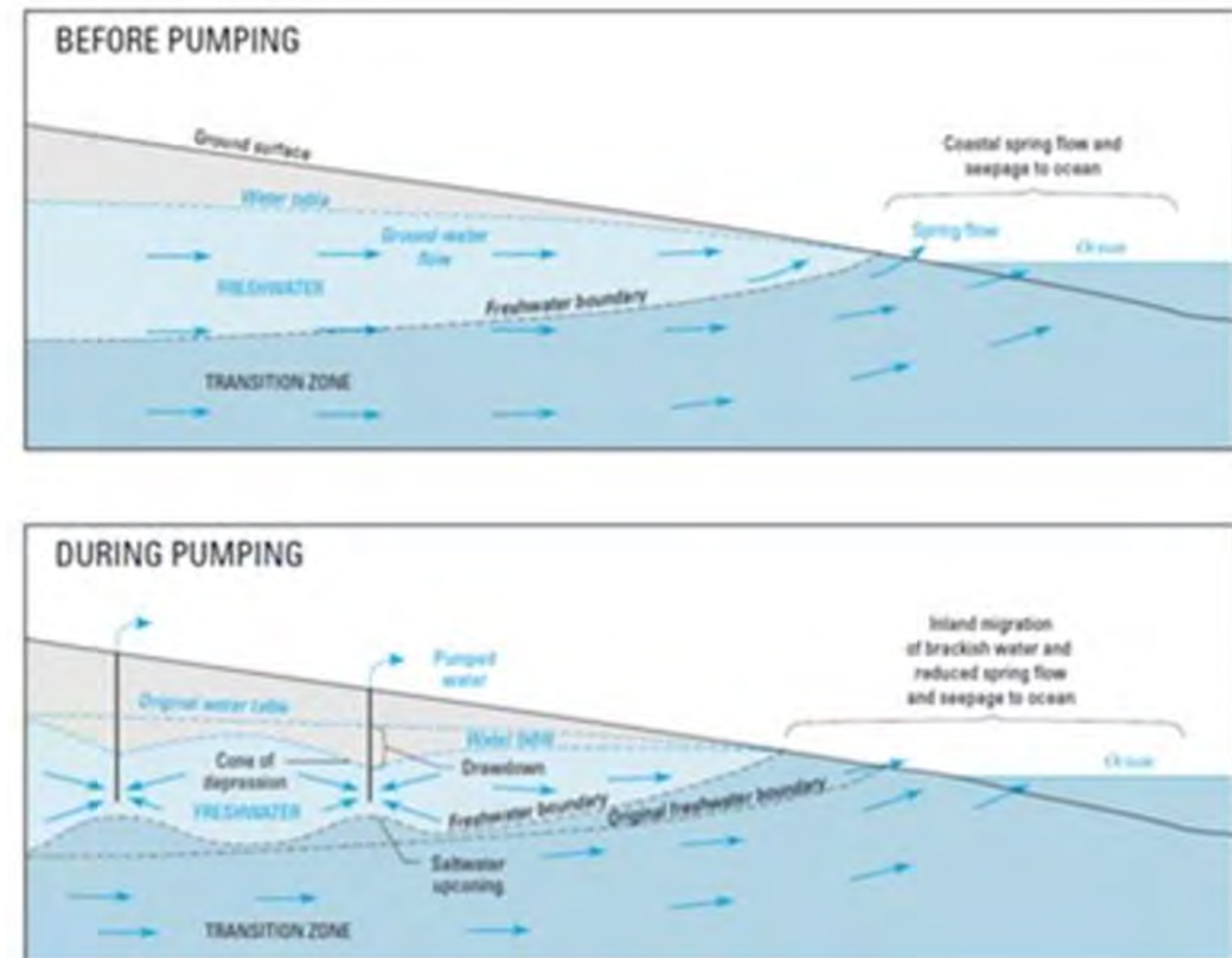
• Square Shape
 Oval Shape
 Mark
 Mark

Favorite Ice Cream Flavor	
Chocolate	X X  X
Vanilla	X X
Coffee	X x
Mint	✓ 
Cookie Dough	X
Other??	lavender ^{rosemary} X

FOCUS AREA 1: WATER QUALITY & SUPPLY

Stressors:

1. Saltwater intrusion
2. Water leaks in distribution system
3. Unmetered water use
4. Over pumping of GW
5. Drought
6. Contaminants in GW
7. Untreated runoff
8. Seepage from leaking septic tanks







Source: USGS



FOCUS AREA 1: WATER QUALITY & SUPPLY

1. Saltwater intrusion

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15  	Extreme 20  	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

2. Water leaks in distribution system

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15 X	Extreme 20 ✓ X X	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18 X	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9 X	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6 X	High 8	High 10
	1 Rare	Low 1	Low 2 X	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

3. Unmetered water use

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	X Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

4. Over pumping of GW

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15 X ✓	Extreme 20 X X	Extreme 25 X
	4 Likely	Moderate 4	High 8	High 12	Extreme 18 X	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

5. Drought

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	X Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	✓ High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	X High 9	X High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

6. Contaminants in GW

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10 X	Extreme 15 X	Extreme 20 X	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

7. Untreated runoff

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10 X	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4 X	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

8. Seepage from leaking septic tanks

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10 X	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 1: WATER QUALITY & SUPPLY

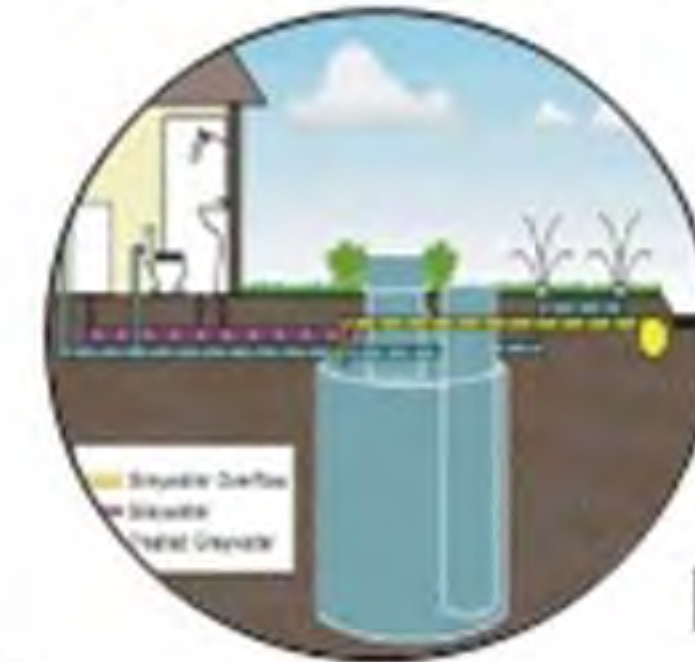
Create, Restore, and Enhance Wetlands



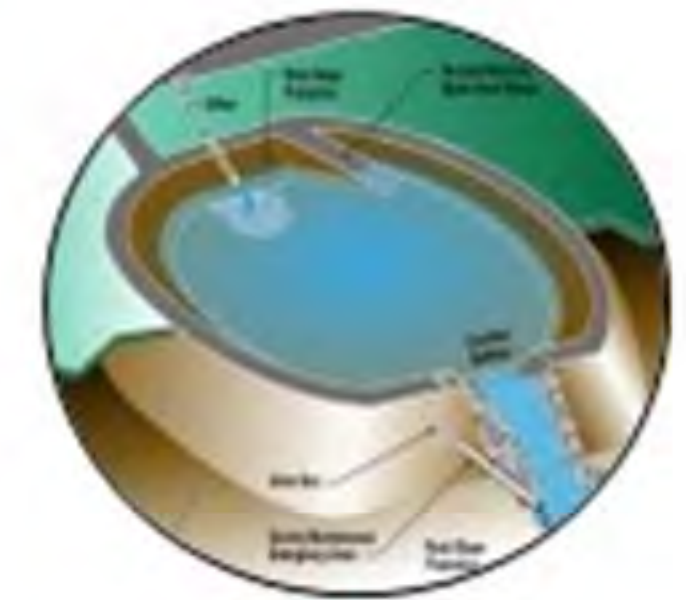
Education & Outreach



Greywater Recycling



Detention Pond



Land Conservation



GW Management Plans



Rainwater Catchment Systems



NNBF
Natural & Nature-Based Features

Non-Structural Solutions
Reduces consequences but not likelihood (e.g. zoning and outreach)

Structural Solutions
Reduces likelihood (e.g. construction)



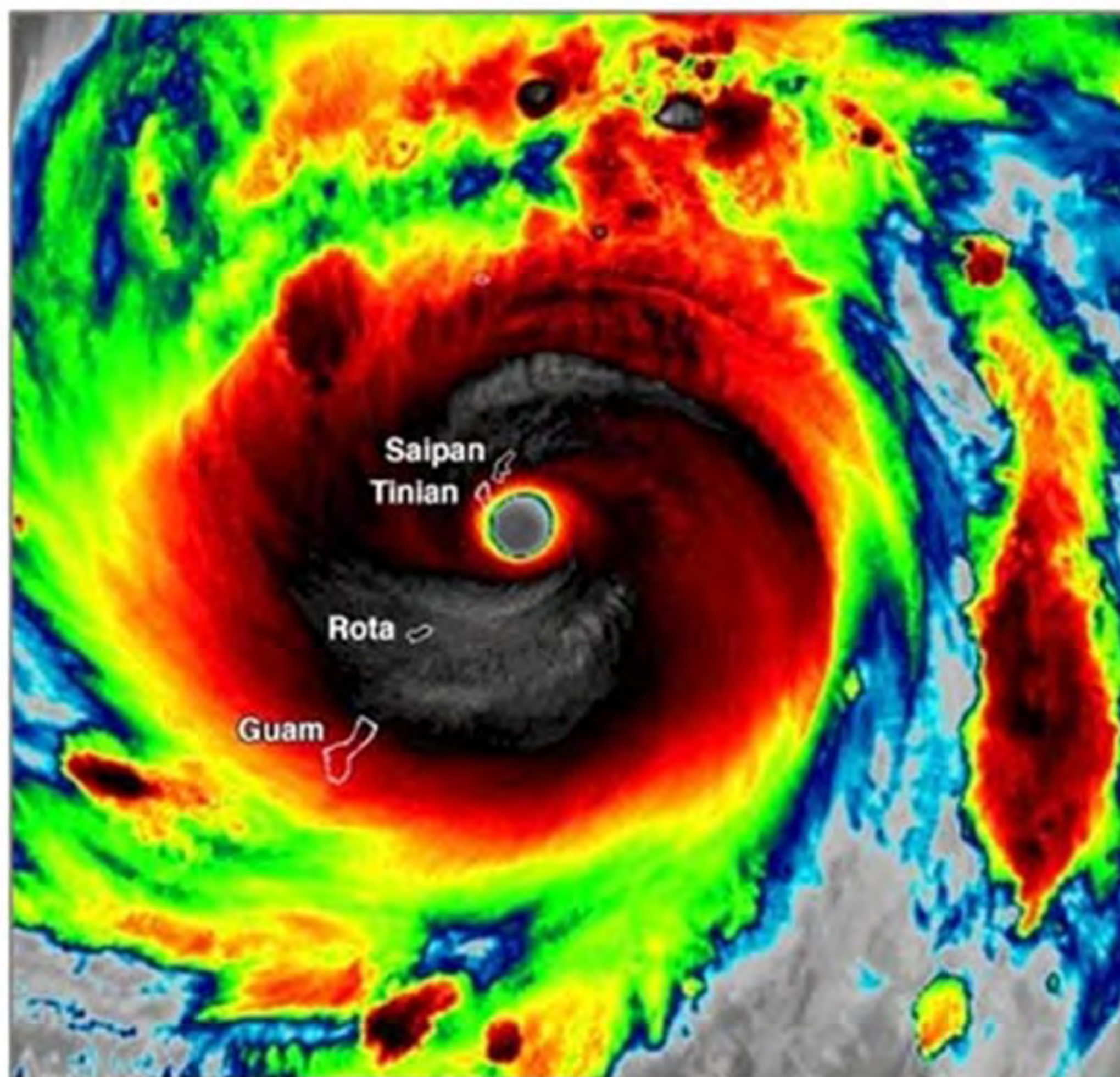
US Army Corps of Engineers.



FOCUS AREA 2: TROPICAL CYCLONES

Stressors:

1. Loss of power
2. Flash flooding
3. Coastal flooding
4. Severe winds



FOCUS AREA 2: TROPICAL CYCLONES

1. Loss of power

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20 X	Extreme 25 X ✓ X
	4 Likely	Moderate 4	High 8	High 12	Extreme 18 X	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 2: TROPICAL CYCLONES

2. Flash flooding

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15 X	Extreme 20 X	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5




FOCUS AREA 2: TROPICAL CYCLONES

3. Coastal flooding

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15 X ✓	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8 X	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 2: TROPICAL CYCLONES

4. Severe winds

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25   
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 2: TROPICAL CYCLONES

Mangrove Restoration



Floodproofing



Relocations



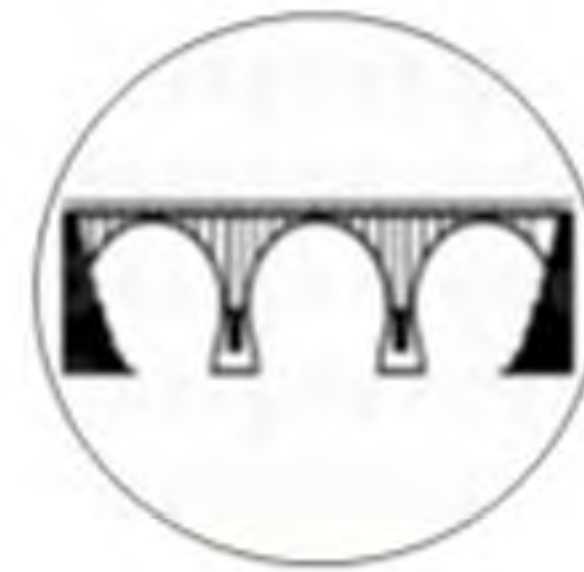
Living Shoreline



Emergency Planning



Elevating Roadways



Floodwall



NNBF
Natural & Nature-Based Features

Non-Structural Solutions
Get people and infrastructure out of the floodplain

Structural Solutions
Block water from the floodplain

FOCUS AREA 3: COASTAL HAZARDS

Stressors:

1. Increasing water temperatures
2. Coral bleaching
3. Sea level rise
4. Water quality impairments
5. Poor land use practices
6. Erosion
7. Sedimentation
8. Surface runoff



FOCUS AREA 3: COASTAL HAZARDS

1. Increasing water temperatures

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

Handwritten annotations in the risk matrix:
 - Blue 'X' in (Almost certain, Minor)
 - Blue 'X' in (Almost certain, Moderate)
 - Green checkmark in (Almost certain, Moderate)
 - Cyan 'X' in (Almost certain, Major)
 - Purple 'X' in (Almost certain, Catastrophic)

FOCUS AREA 3: COASTAL HAZARDS

2. Coral bleaching

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 3: COASTAL HAZARDS

3. Sea level rise

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10 <i>X</i>	Extreme 15 <i>X</i>	Extreme 20 <i>X</i>	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 3: COASTAL HAZARDS

4. Water quality impairments

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

X X
X

FOCUS AREA 3: COASTAL HAZARDS

5. Poor land use practices

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 3: COASTAL HAZARDS

6. Erosion

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

X
X
X

FOCUS AREA 3: COASTAL HAZARDS

7. Sedimentation

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 3: COASTAL HAZARDS

8. Surface runoff

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10 X ✓	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 3: COASTAL HAZARDS

Mangrove Restoration



Education & Outreach



Sediment Traps



Living Shoreline



Policies & Enforcement



Stormwater Management



Shoreline Armoring



NNBF
Natural & Nature-Based Features

Non-Structural Solutions
Reduces consequences but not likelihood (e.g. zoning and outreach)

Structural Solutions
Reduces likelihood (e.g. construction)



FOCUS AREA 4: ECOLOGICAL THREATS

Stressors:

1. Invasive species
2. Wildfires
3. Poor land use practices



FOCUS AREA 4: ECOLOGICAL THREATS

1. Invasive species

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 4: ECOLOGICAL THREATS

2. Wildfires

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 4: ECOLOGICAL THREATS

3. Poor land use practices

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 18	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

FOCUS AREA 4: ECOLOGICAL THREATS

Create, Restore, and Enhance Wetlands



Education & Outreach



Native Vegetation Planting



Habitat Conservation



Planning



Policies & Enforcement



Invasive Species Control



NNBF
Natural & Nature-Based Features

Non-Structural Solutions
Reduces consequences but not likelihood (e.g. zoning and outreach)

Structural Solutions
Reduces likelihood (e.g. construction)



US Army Corps of Engineers.



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CLOSING REMARKS



The Commonwealth of the Northern Mariana Islands

Final Watershed Plan

APPENDIX A - Attachment 4

Stakeholder Meeting # 7 – Annotated Slide Deck

July 2022



**US Army Corps
of Engineers**®
Honolulu District



Commonwealth of the Northern Mariana Islands (CNMI)

POST-DISASTER WATERSHED ASSESSMENT

STAKEHOLDER MEETING

AUGUST 9, 2021



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



**US Army Corps
of Engineers.**



AGENDA

- I. Introductions in Chat – All
- II. Opening Statements – USACE and DCRM Director
- III. Watershed Assessment Overview – USACE
- IV. Exercise: Risk Assessment – All
- V. Closing Remarks – USACE



THE TEAM – NON-FEDERAL PARTNER

CNMI Bureau of Environmental and Coastal Quality
Division of Coastal Resources Management

Janice E. Castro, Director



THE TEAM – USACE

Name	Role	Organization
Jeff Herzog	Project Manager	USACE – Honolulu
Brooke Schlenker	Lead Planner	USACE – Sacramento
Patricia Fontanet Rodríguez	Planner	USACE – Sacramento
Elise Jarrett	Planner	USACE – Sacramento
Lori Schultz	H&H Engineering	USACE – Sacramento
Ellie Covington	Environmental	USACE – San Francisco
John Nielsen	Economist	USACE – Sacramento
David Sobel	Economist	USACE – Sacramento
Ruzel Ednalino	Cultural	USACE – San Francisco
Chuck Mesa	Coastal Engineering	USACE – Los Angeles
Rhiannon Kucharski	Branch Chief, Civil and Public Works	USACE – Honolulu



WATERSHED ASSESSMENT – CHECK IN

Goal: Develop a Watershed Assessment to increase resiliency in the CNMI through social, economic, and environmentally sustainable development by planning for disasters, developing infrastructure, and conserving resources.

Deliverable: A conceptual plan outlining strategic investment opportunities for Federal and local agencies to increase resiliency across Saipan, Tinian, and Rota.

What's Next: Recommendations Milestone scheduled for October 2021.



WHAT'S BEEN ACCOMPLISHED?

- 3 stakeholder meetings (July and December 2020; March 2021)
 - Received stakeholder input, validated study scoping
 - Resource-sharing and data transfer
 - Identified problems and stressors in Saipan, Tinian, and Rota.
- USACE Shared Vision Milestone (January 2021)
 - Received approval on study progress and path forward
- Monthly meetings with Federal Partners to limit redundancy and streamline resources in recovery effort
- Ongoing agency coordination with local and Federal Partners



EXERCISE: RISK ASSESSMENT

Purpose:

1. Rank consequences for problem stressors
2. Mark locations where stressor consequences are higher
3. Identify types of recommendations that could lessen consequences

Overview:

- Four focus areas (i.e. the overarching problems) and their stressors have been identified. Using the "annotation" function in Webex, stakeholders can rank each stressor in terms of consequence and mark their location, to help USACE gage the level of risk.
- Stakeholders will then provide input on which types of recommendations should be applied for each stressor, to give USACE an idea of which types of recommendations to include in the Watershed Assessment.



EXERCISE: RISK ASSESSMENT

Focus Areas & Stressors:

1. Water Quality and Supply

- Saltwater intrusion
- Water leaks in distribution system
- Unmetered water use
- Over pumping of GW
- Drought
- Contaminants in GW
- Untreated runoff
- Seepage from leaking septic tanks

2. Tropical Cyclones

- Loss of power
- Flash flooding
- Coastal flooding
- Severe winds

3. Coastal Hazards

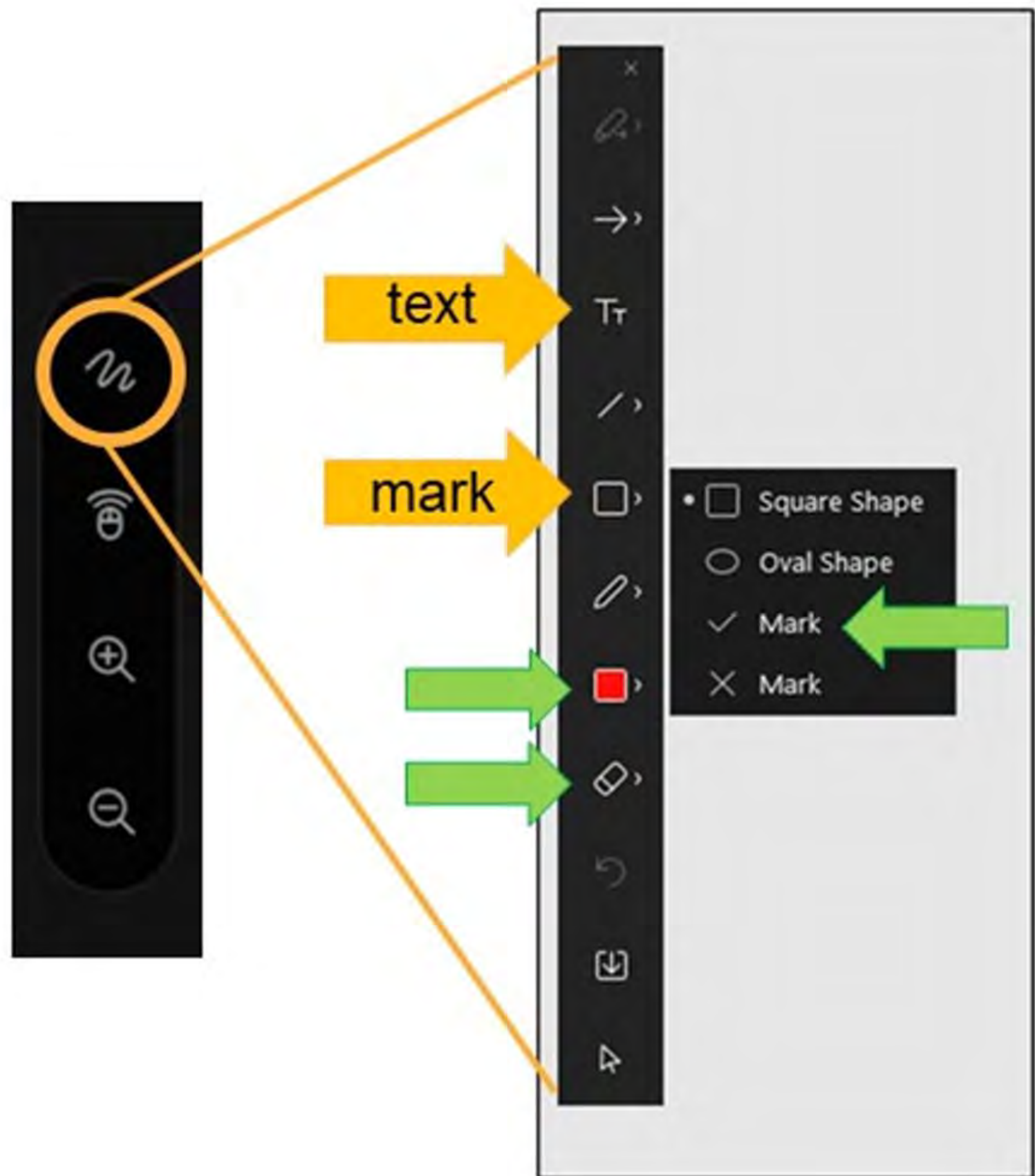
- Increasing water temperatures
- Coral bleaching
- Sea level rise
- Water quality impairments
- Poor land use practices
- Erosion
- Sedimentation
- Surface runoff

4. Ecological Threats

- Invasive species
- Wildfires
- Poor land use practices



HOW TO ANNOTATE IN WEBEX

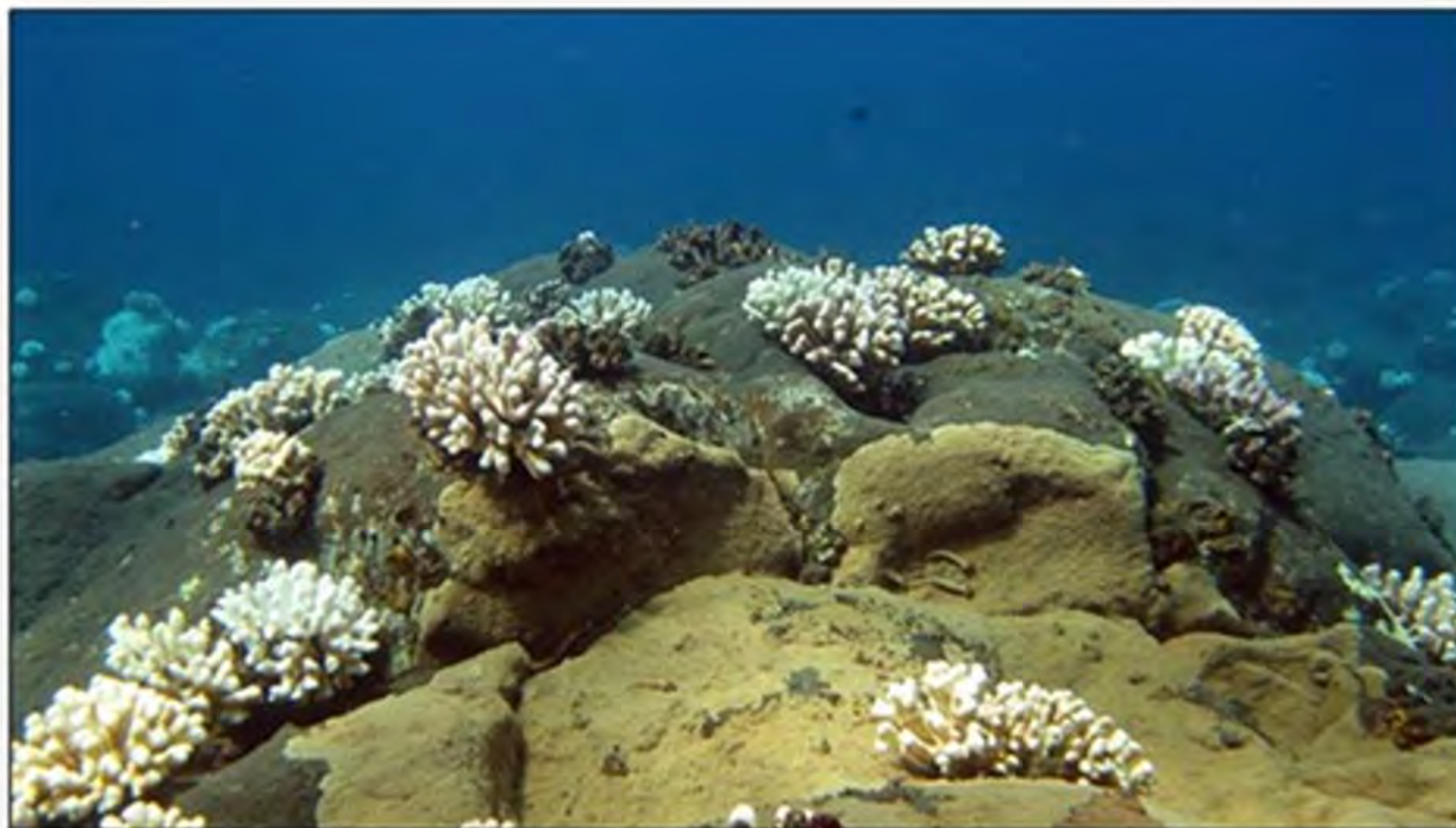


Favorite Ice Cream Flavor	
Chocolate	
Vanilla	
Coffee	
Mint	
Cookie Dough	
Other??	

FOCUS AREA 1: COASTAL HAZARDS

Stressors:

1. Increasing water temperatures
2. Coral bleaching
3. Sea level rise
4. Water quality impairments
5. Poor land use practices
6. Erosion
7. Sedimentation
8. Surface runoff

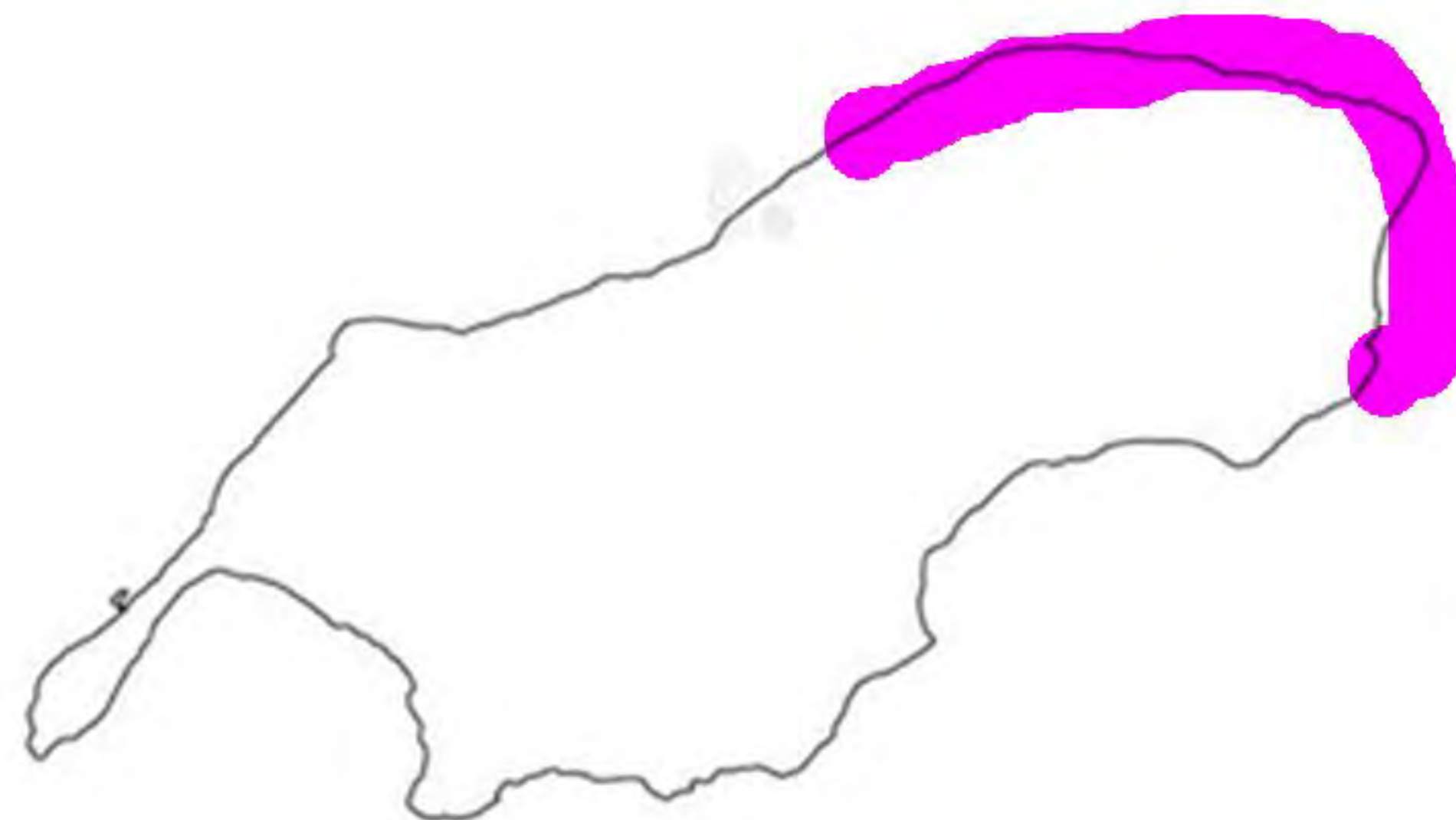
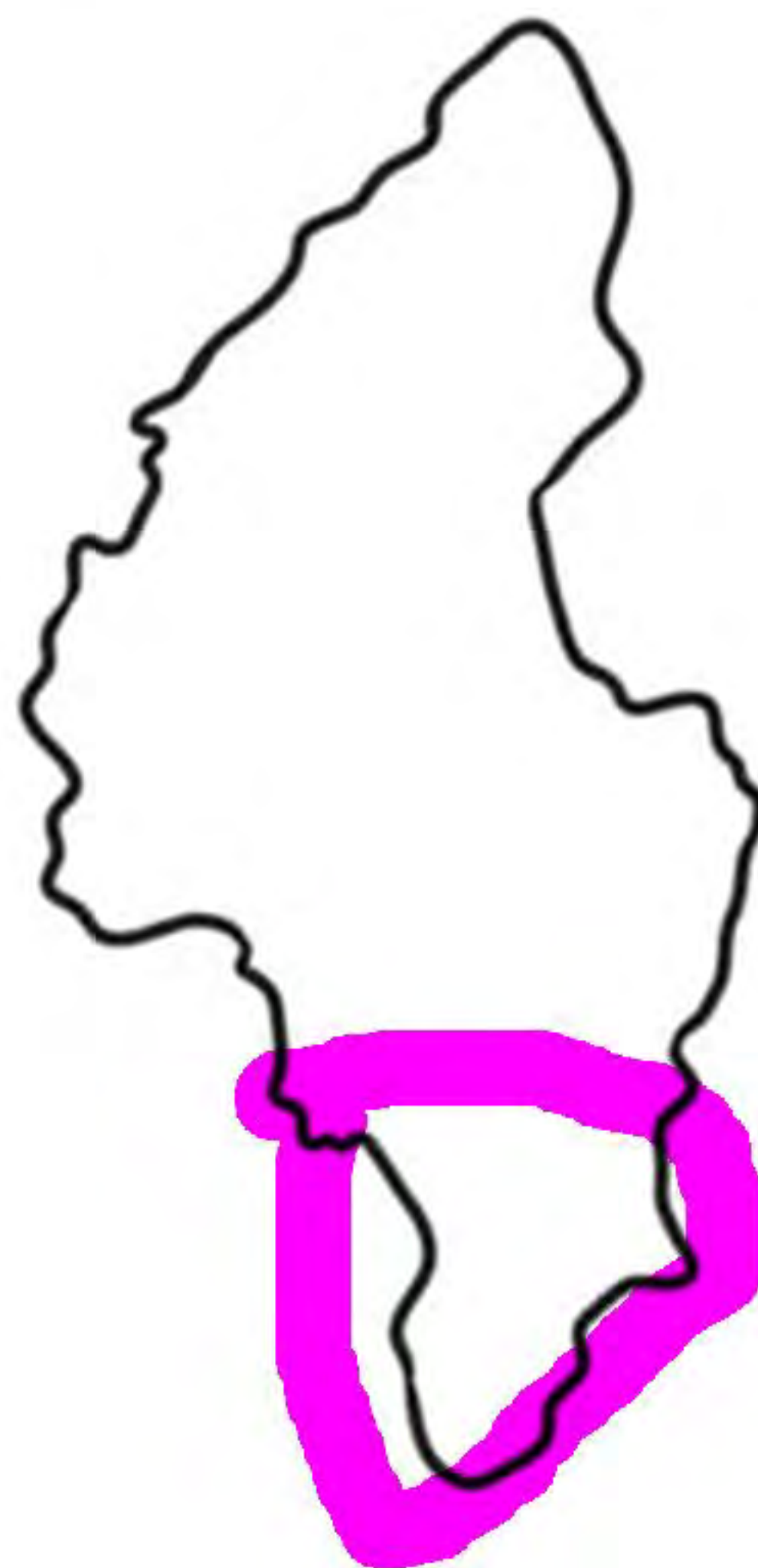
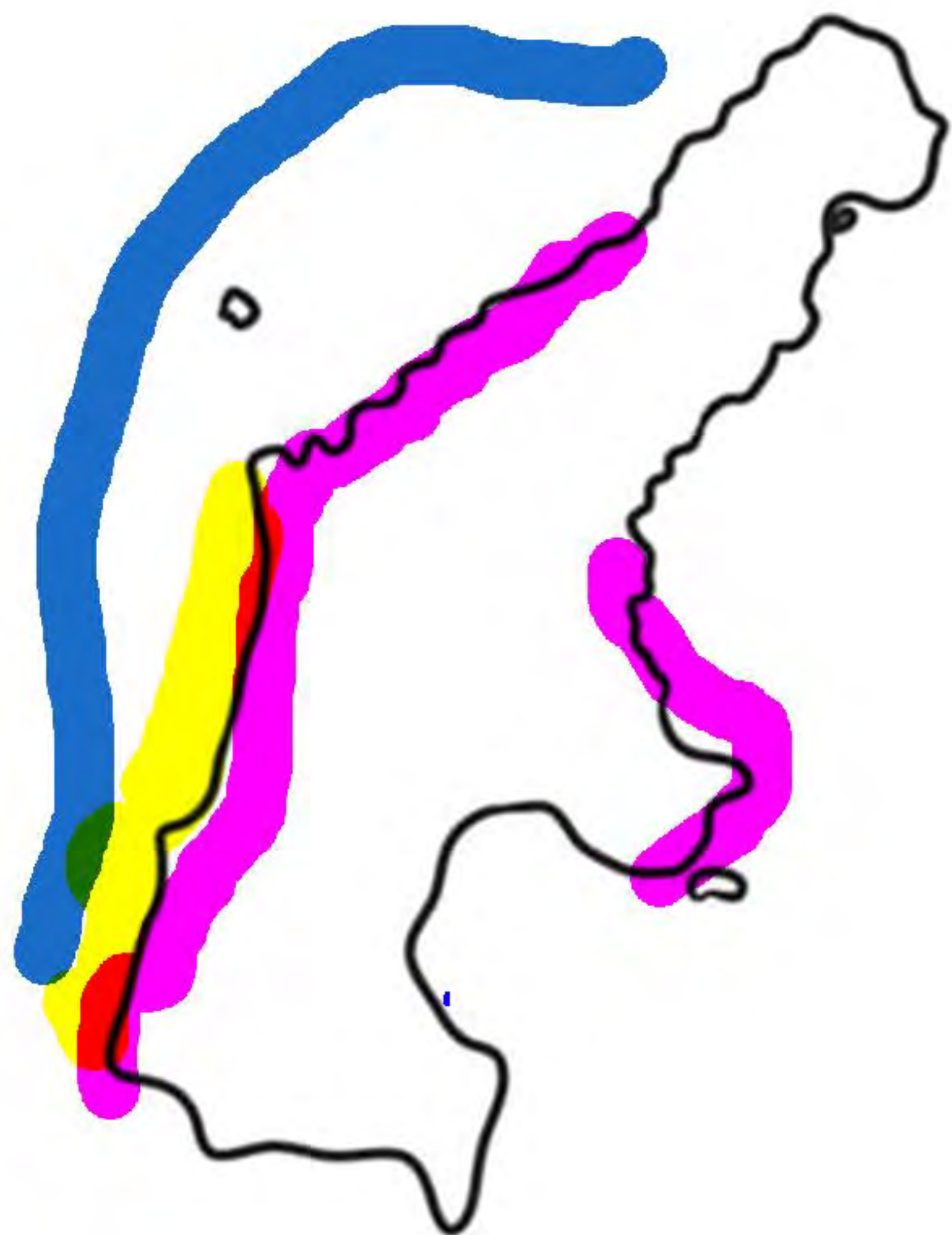
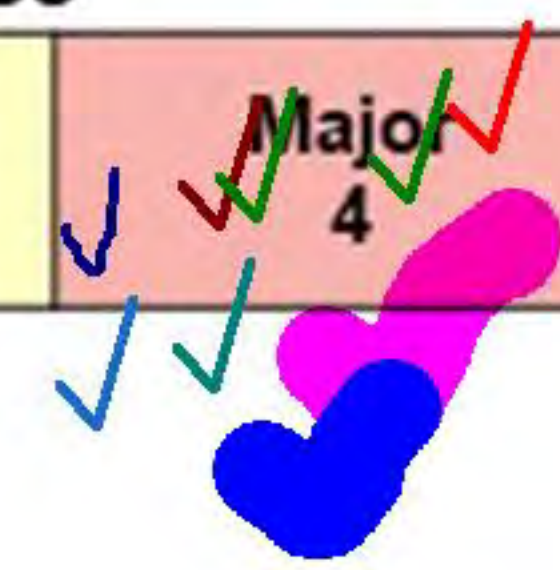


FOCUS AREA: COASTAL HAZARDS

1. Increasing water temperatures

Where are consequences highest?

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5



 Everywhere

1. Increasing water temperatures

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

stop human impact
reducing green house gas emissions
Improving water quality
Preserving genetic diversity for corals

Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

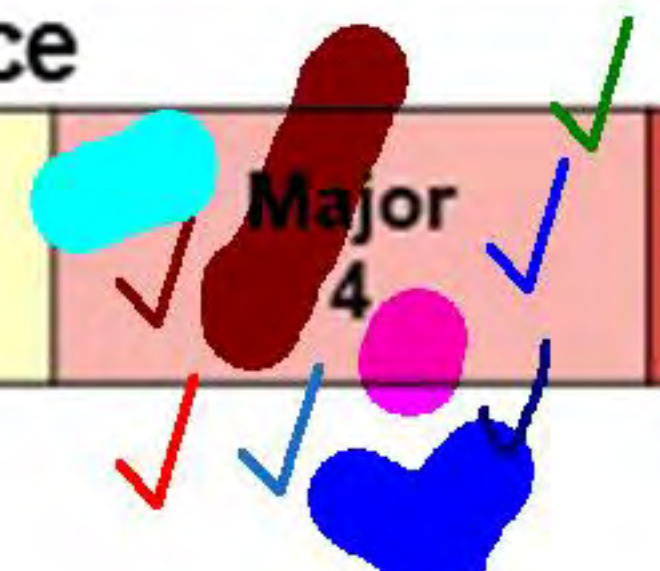
Structural



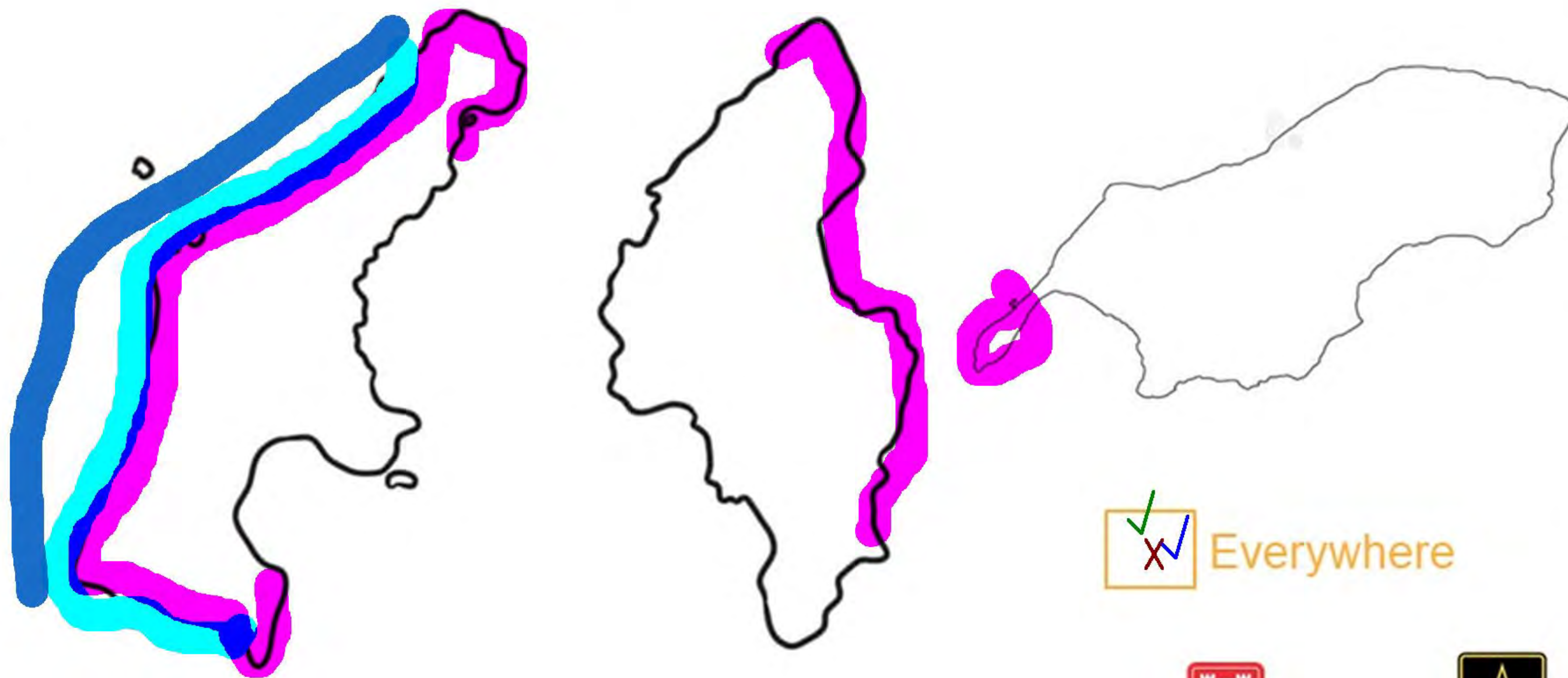
(E.g. rip rap)

2. Coral bleaching

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5



Where are consequences highest?



 Everywhere

2. Coral bleaching

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

more inforcement
planting resilient corals

Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

Structural



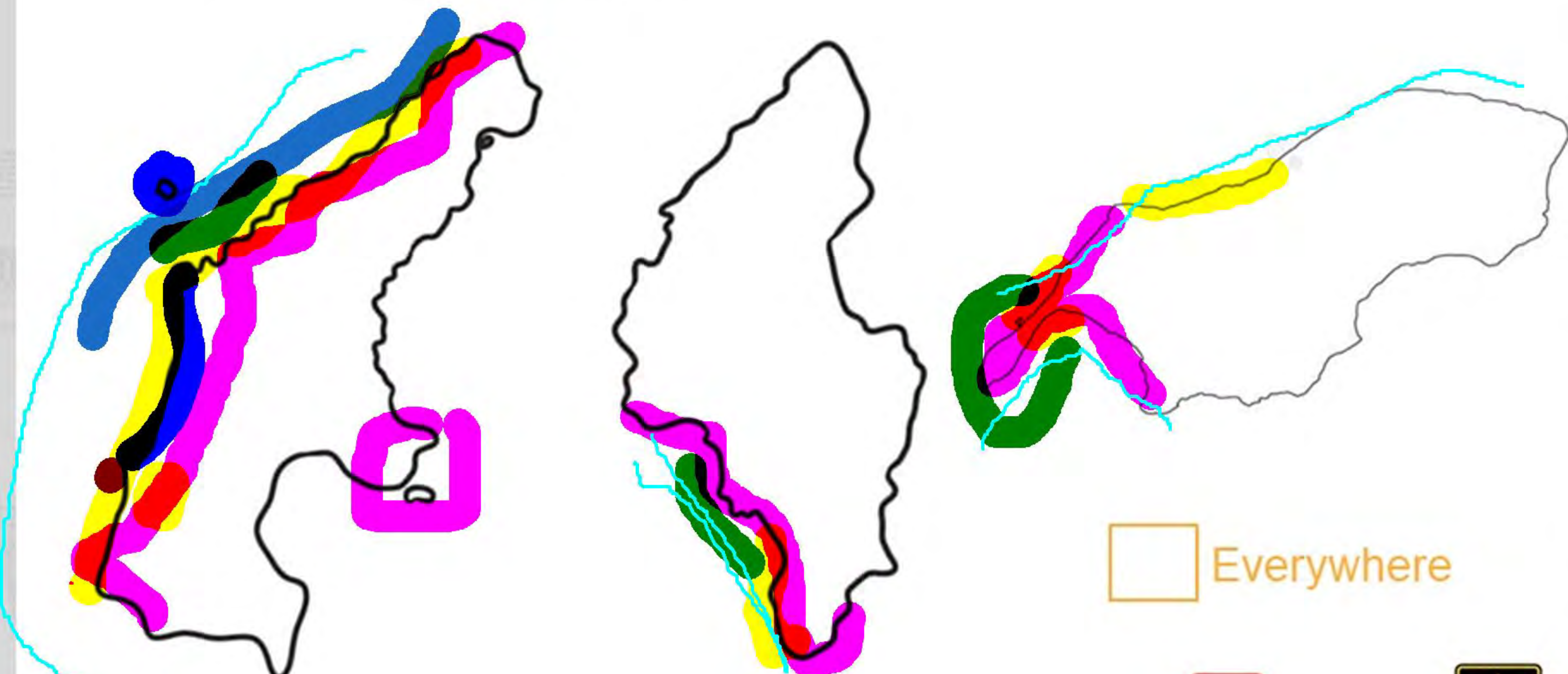
(E.g. rip rap)

FOCUS AREA: COASTAL HAZARDS

3. Sea level rise

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

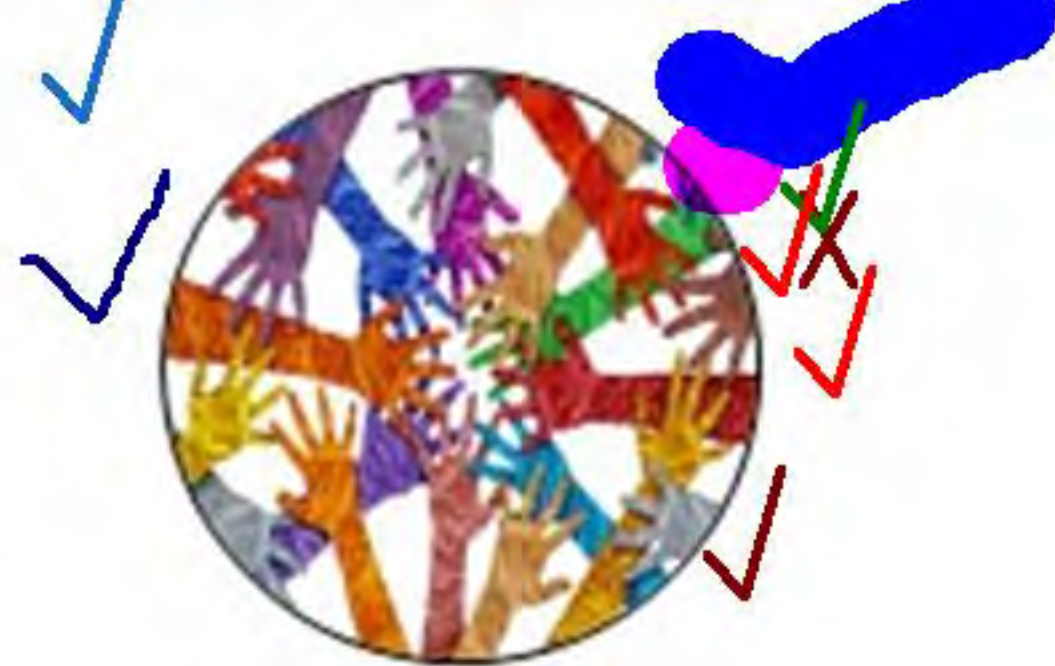
Where are consequences highest?



3. Sea level rise

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

stop killing native trees on saipan tinian rota beaches

Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

Structural



(E.g. rip rap)

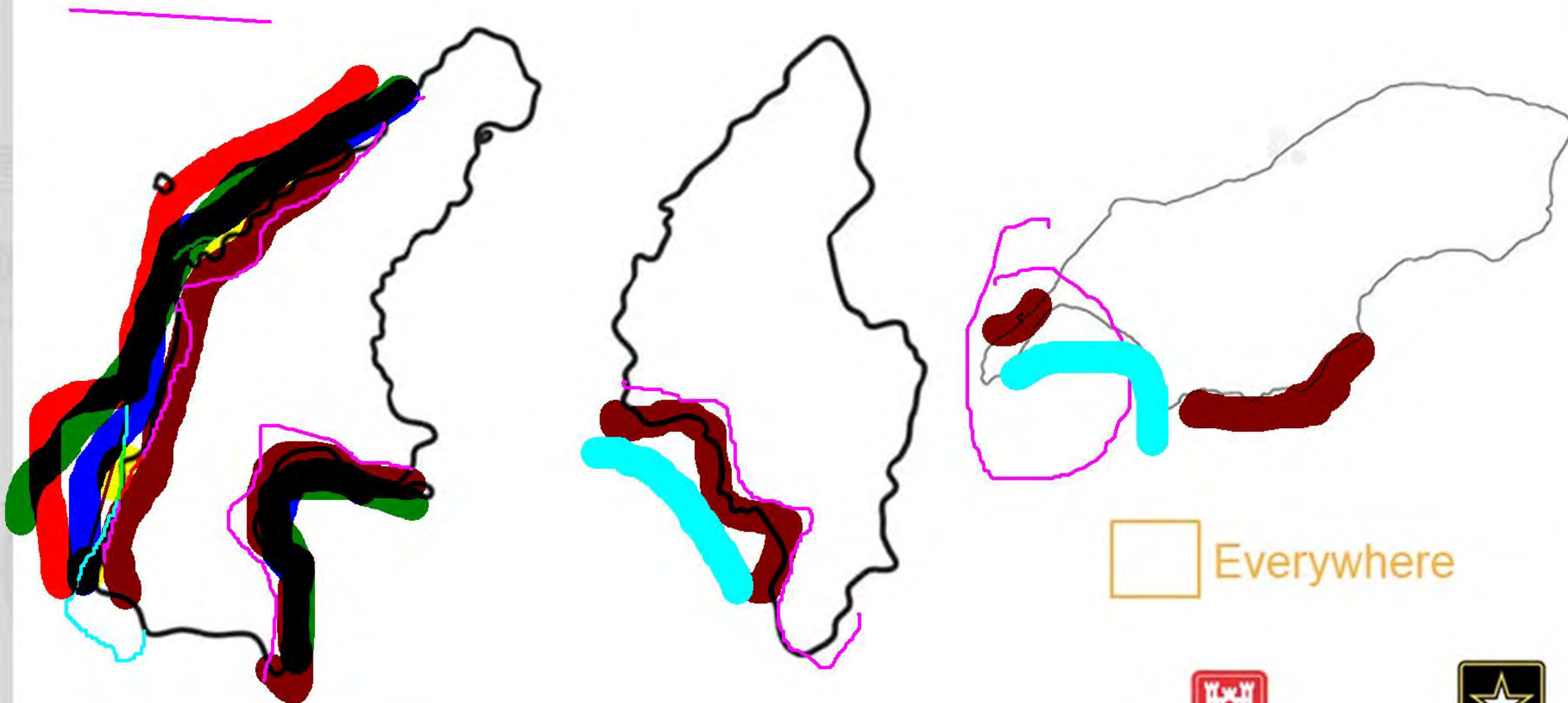


FOCUS AREA: COASTAL HAZARDS

4. Water quality impairments

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

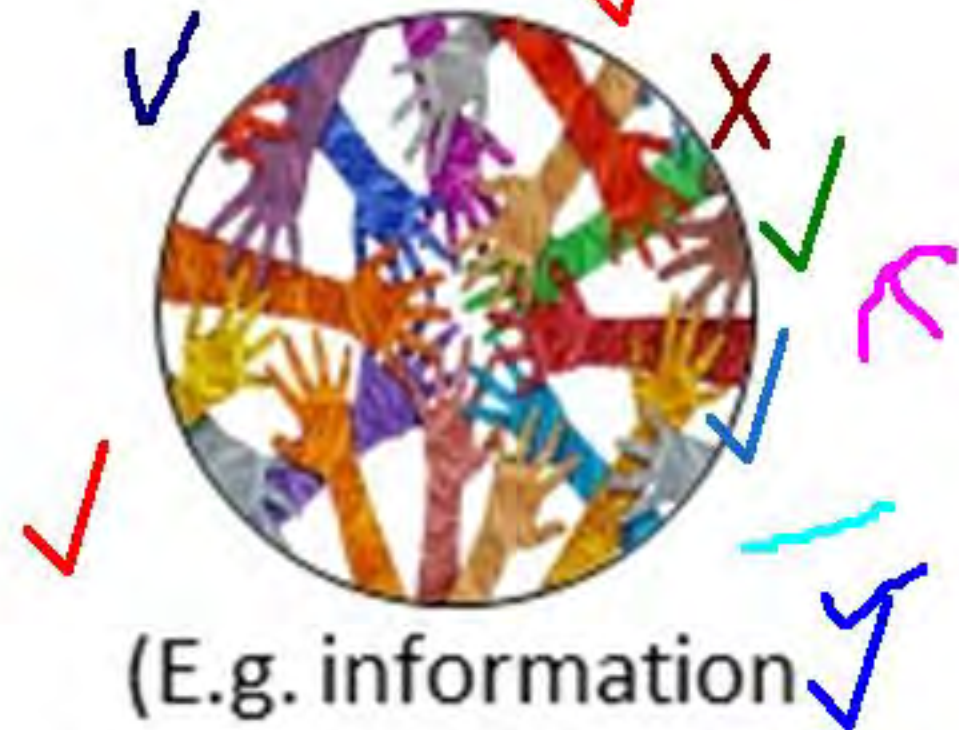
Where are consequences highest?



4. Water quality impairments

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

Enforcement

Maintenance of drainage systems

MAINTENANCE ENFORCEMENT

low water crossings on coastal roads, effective road runoff

More trees

Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

Structural



(E.g. rip rap)



US Army Corps of Engineers.



5. Poor land use practices

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
		✓ ✓ ✓	✗	

Where are consequences highest?



5. Poor land use practices

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

Enforcement
CHECK WITH EVERY GOVERNMENT DEPARTMENT BEFORE DOING ANYTHING ENFORCEMENT

Better land use planning
Enforcement of BMPs

Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

Structural



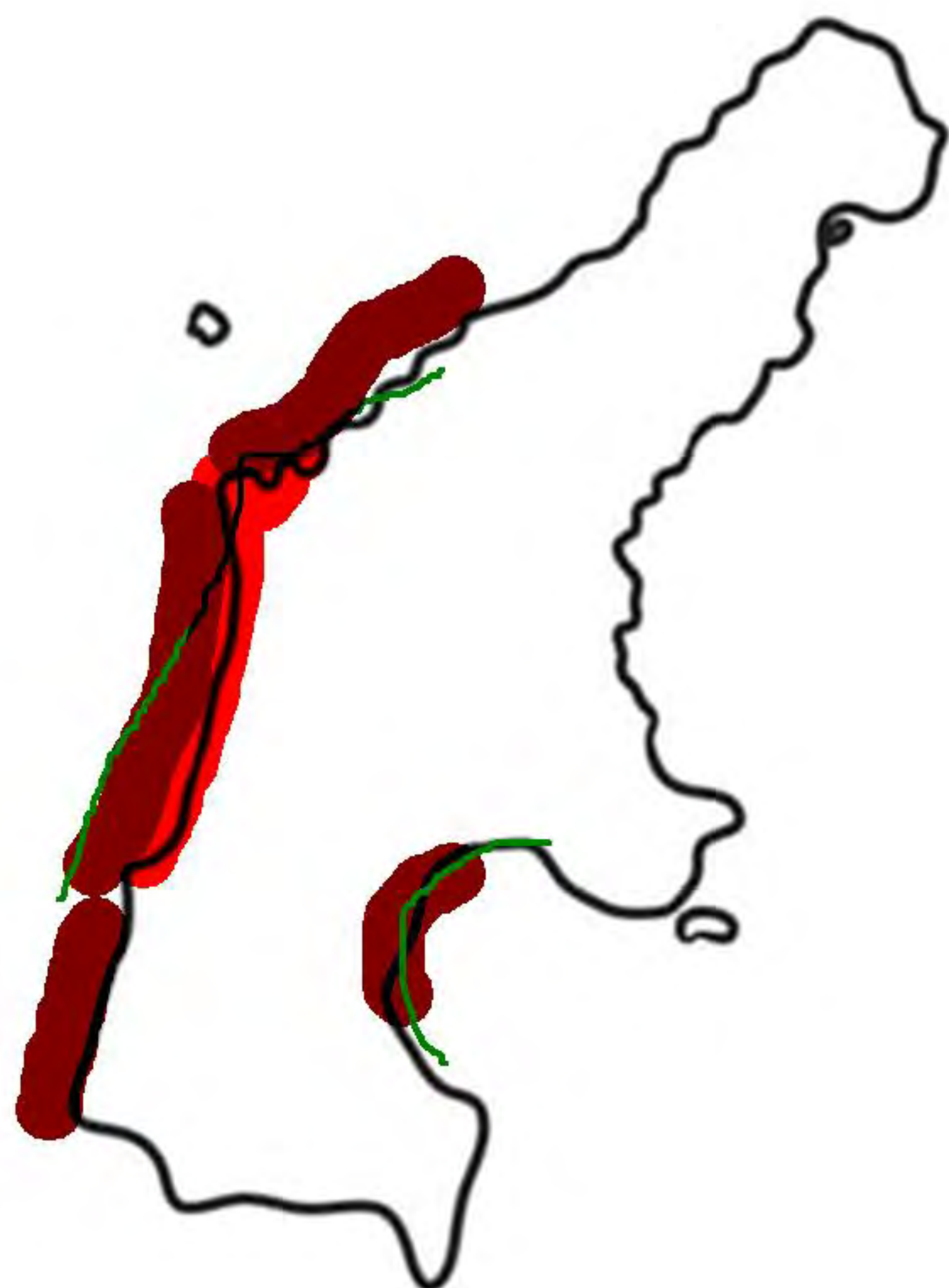
(E.g. rip rap)

6. Erosion

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Handwritten annotations on the table: blue checkmarks under Major and Catastrophic; red checkmarks under Major and Catastrophic; a green 'X' under Major; and a green checkmark under Catastrophic.

Where are consequences highest?



Everywhere

6. Erosion

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other



Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

Structural



(E.g. rip rap)



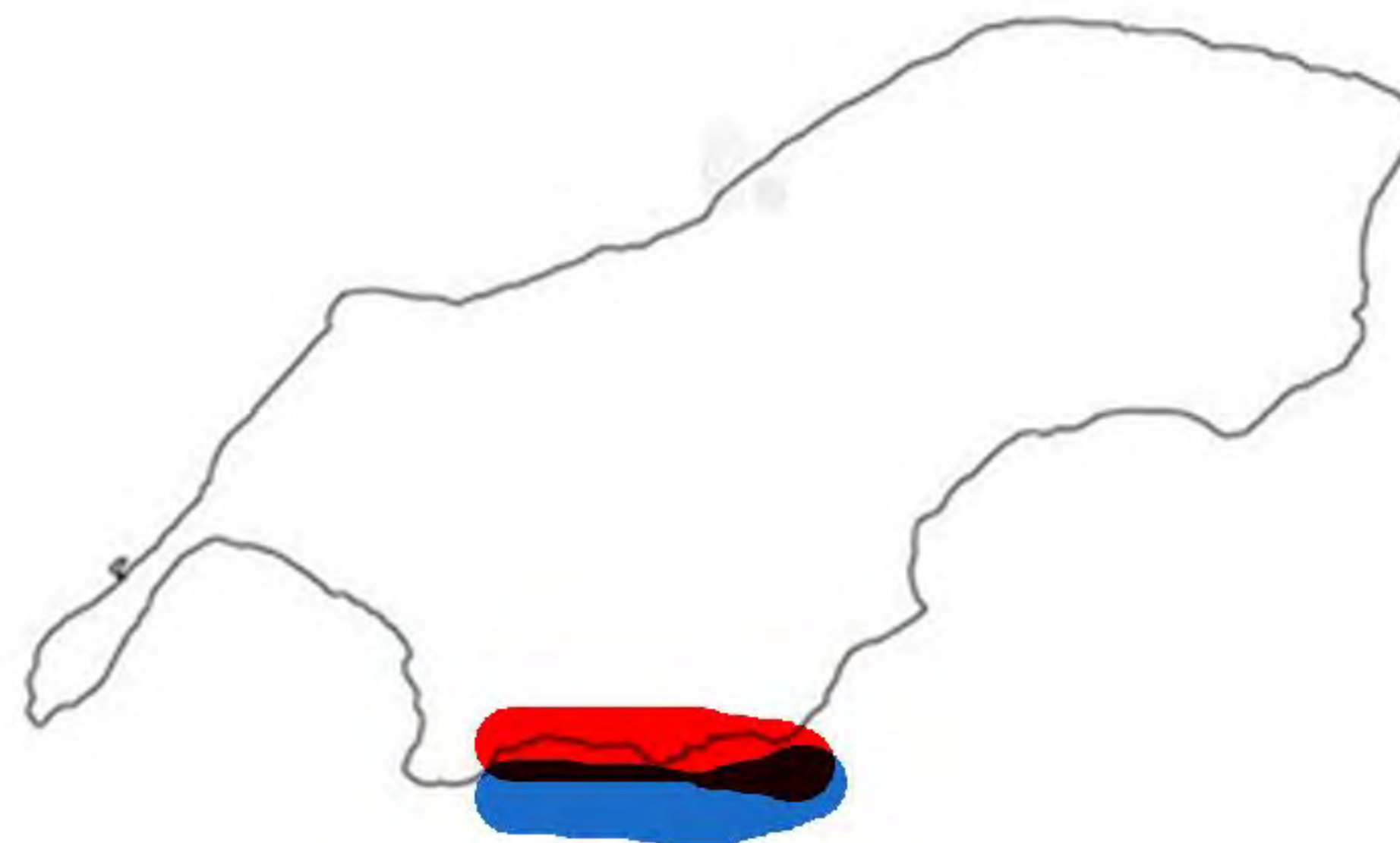
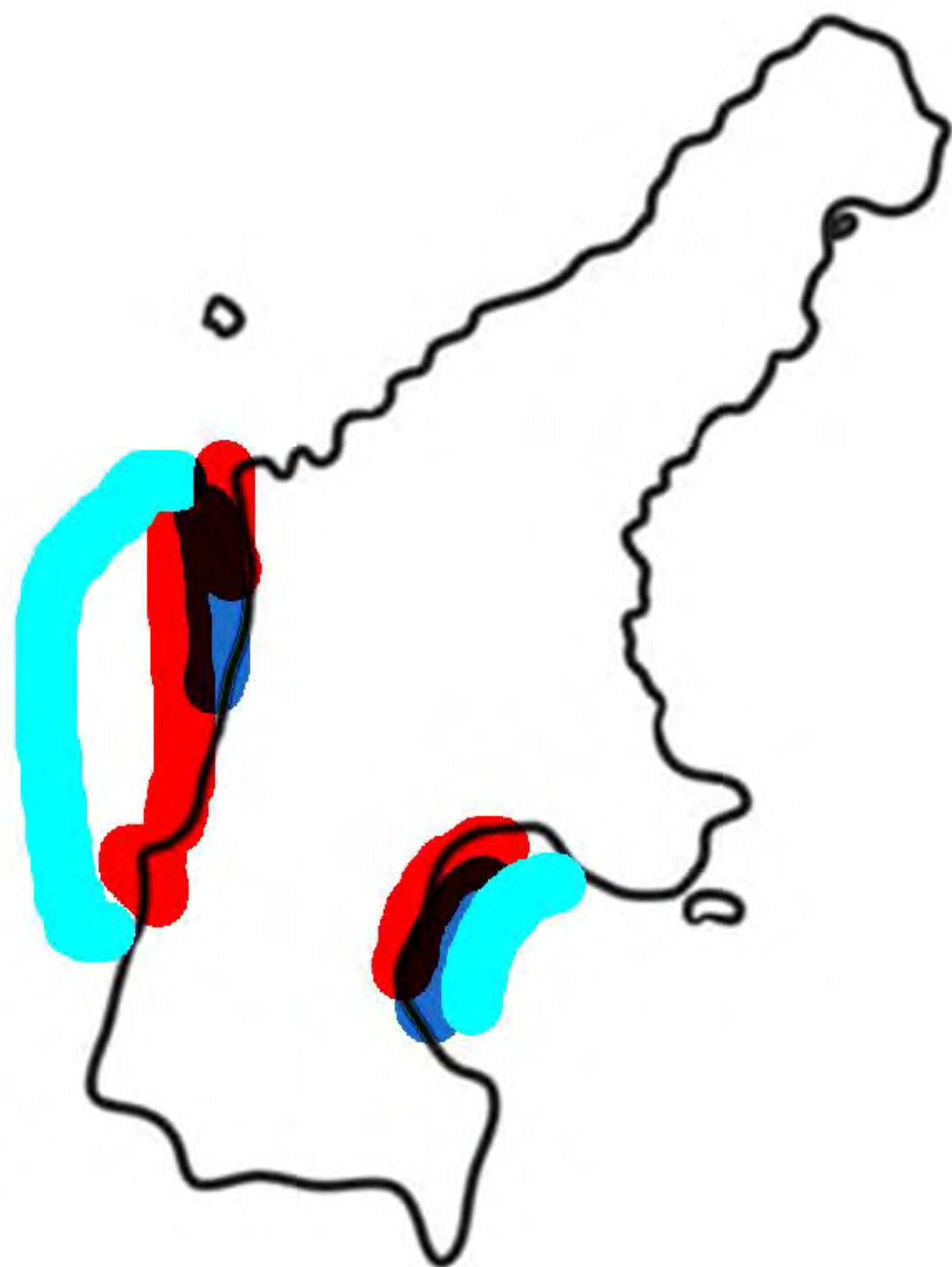
US Army Corps of Engineers.



7. Sedimentation

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



□ Everywhere

7. Sedimentation

What is needed in the near-term to lessen the consequences?

Education & Outreach



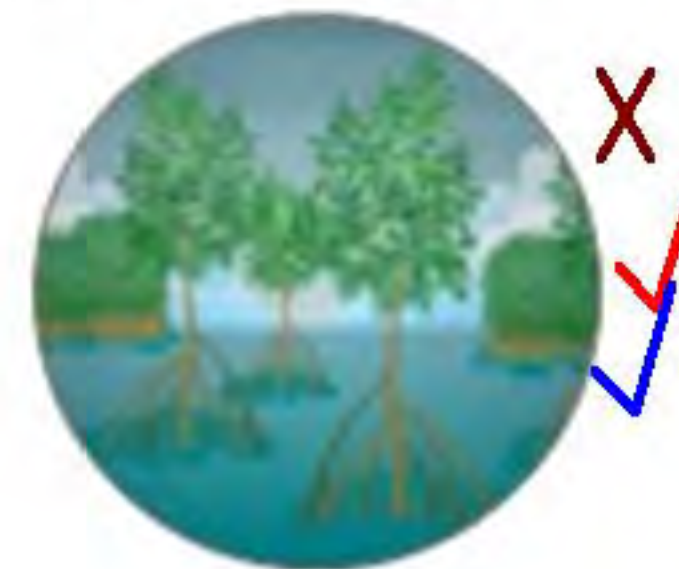
(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other



Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

Structural



(E.g. rip rap)

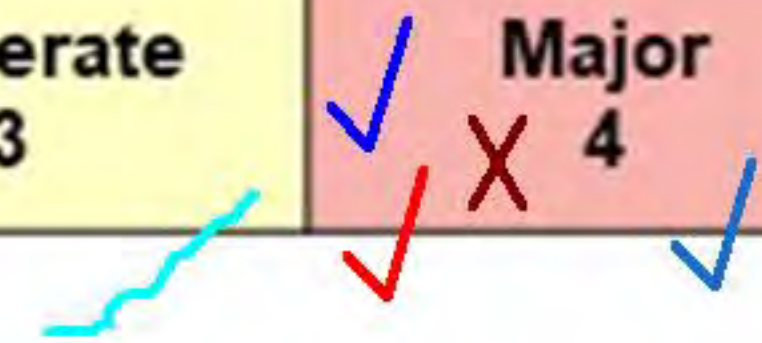


US Army Corps of Engineers.



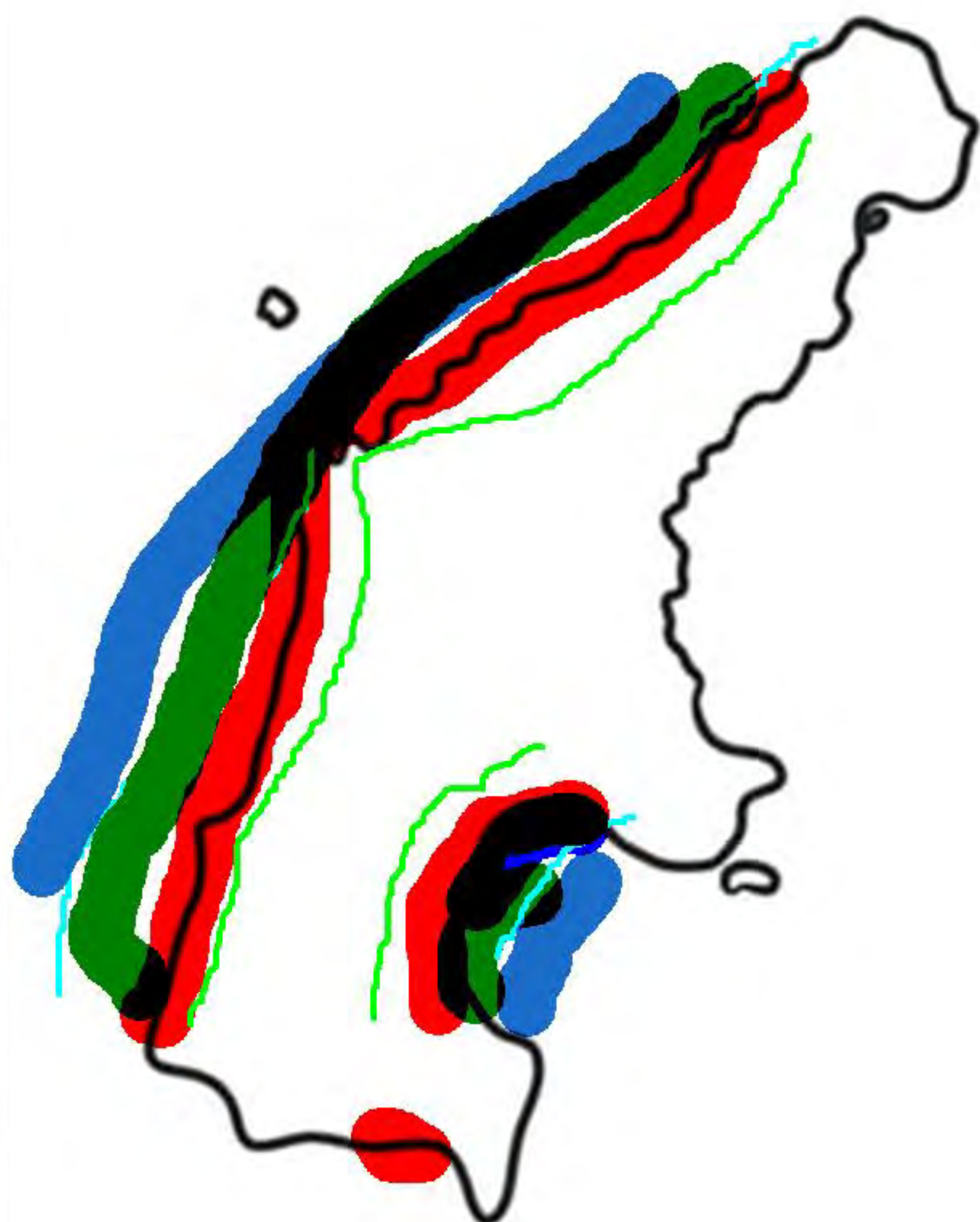
8. Surface runoff

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5



Where are consequences highest?

Each outlet on eastern side of island



Everywhere

8. Surface runoff

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

Install more permeable parking

Stormwater retrofits

Encourage more green infrastructure not just encourage- Require!

Policy



(E.g. Building codes)

Non-structural



(E.g. stormwater management)

Structural



(E.g. rip rap)



US Army Corps of Engineers.



FOCUS AREA 2: ECOLOGICAL THREATS

Stressors:

1. Invasive species
2. Wildfires
3. Poor land use practices

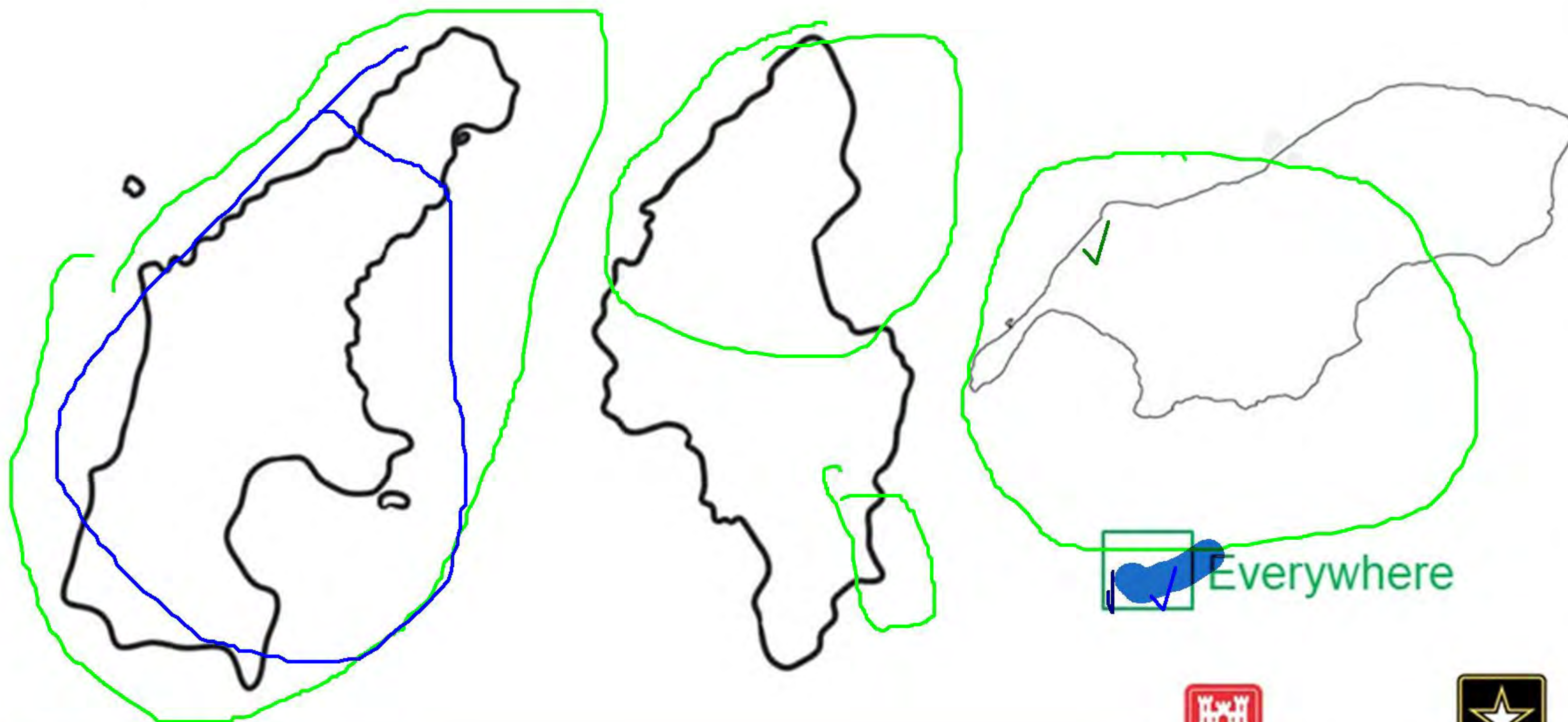


FOCUS AREA: ECOLOGICAL THREATS

1. Invasive species

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



1. Invasive species

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

MORE HELPERS
citizen vine removals,
Encourage more planting of native trees/conversion of invasive areas to native
Policies for dealing with ballast water from ships

Policy



(E.g. Increase enforcement)

Non-structural



(E.g. native vegetation planting)

Structural

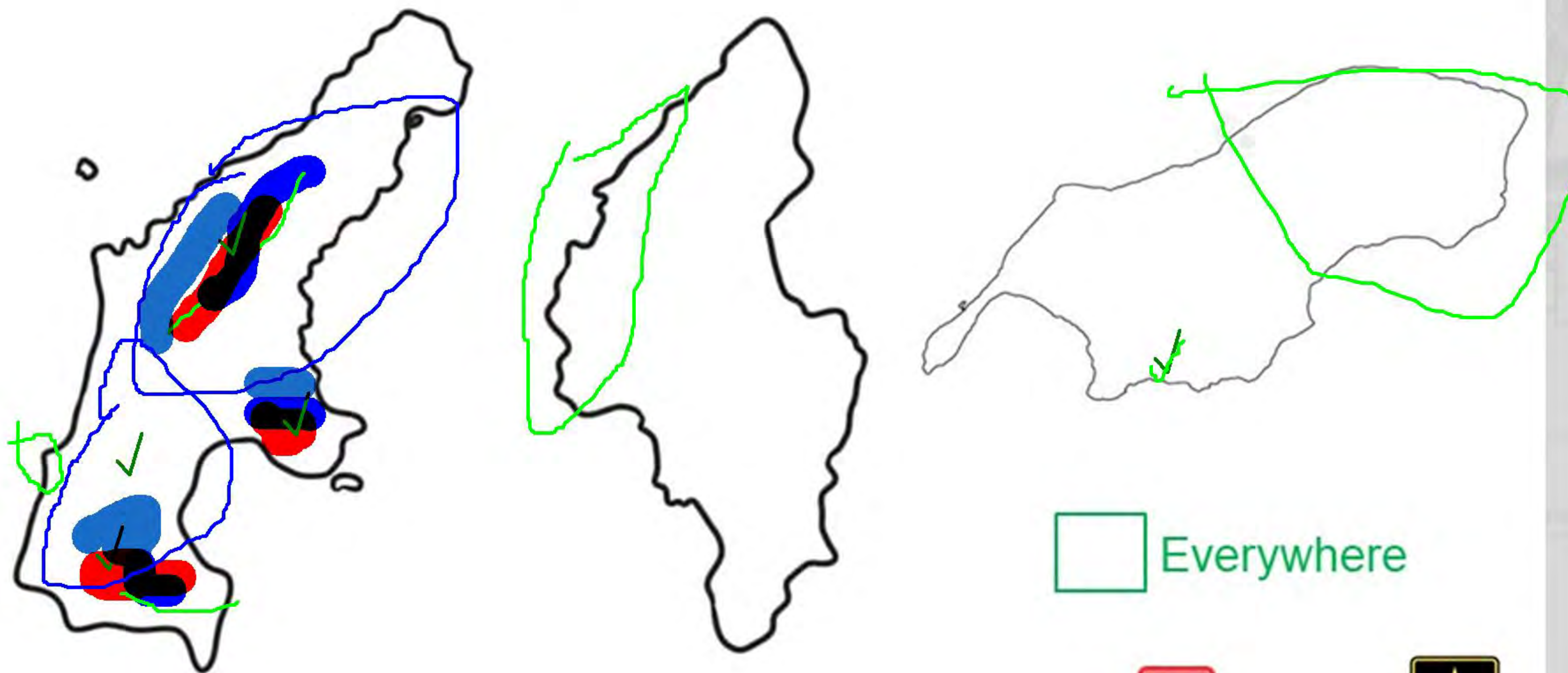


(E.g. erosion control)

2. Wildfires

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

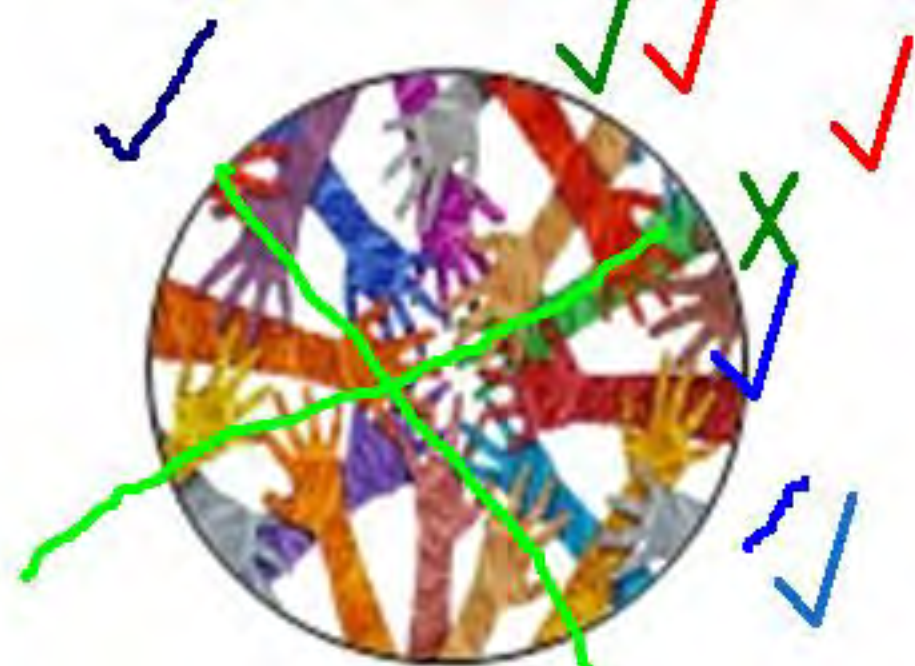
Where are consequences highest?



2. Wildfires

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Encourage no burning when hunting

Other

REMEMBER WILDFIRE HAPPENS BY HUNTERS AND HUMAN AS WELL WHO SMOKE AND TEND TO JUST FLICK THIER GI

BUTT OUT OF THIER CAR WINDOW AND BACKYARD BURNING

Policy



(E.g. Increase enforcement)

Non-structural



(E.g. native vegetation planting)

Structural



(E.g. erosion control)



US Army Corps of Engineers.



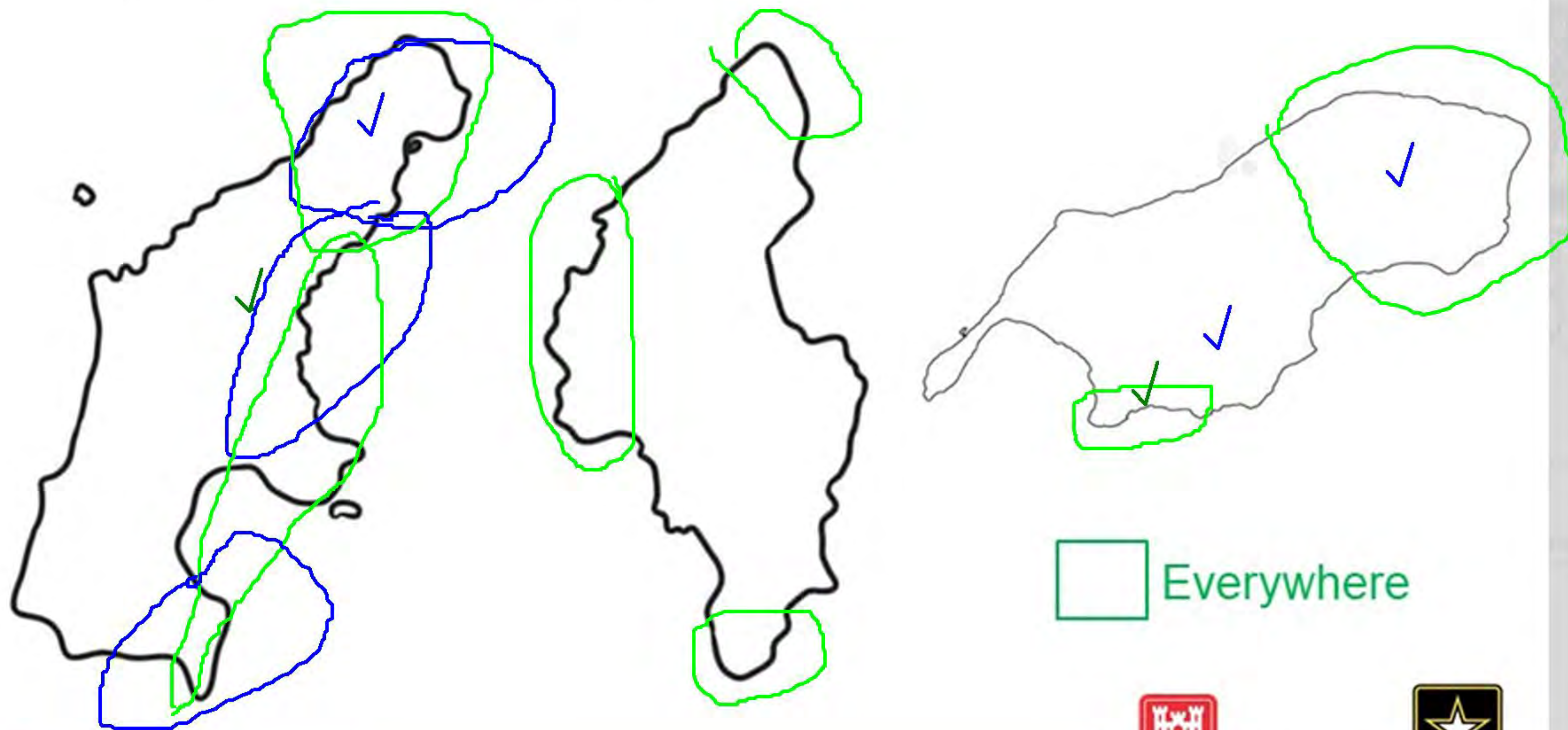
FOCUS AREA: ECOLOGICAL THREATS

3. Poor land use practices

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

✓
✓
✓

Where are consequences highest?



3. Poor land use practices

What is needed in the near-term to lessen the consequences?



Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

Improved land use planning
Education of BMPs
Increase monitoring of illegal dumping
Municipal trash collection in villages.

Policy



(E.g. Increase enforcement)

Non-structural



(E.g. native vegetation planting)

Structural



(E.g. erosion control)



US Army Corps of Engineers.



CLOSING REMARKS



Commonwealth of the Northern Mariana Islands (CNMI)

POST-DISASTER WATERSHED ASSESSMENT

STAKEHOLDER MEETING

AUGUST 12, 2021 PST



"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."



**US Army Corps
of Engineers.**



AGENDA

- I. Introductions in Chat – All
- II. Opening Statements – USACE and DCRM Director
- III. Watershed Assessment Overview – USACE
- IV. Exercise: Risk Assessment – All
- V. Closing Remarks – USACE



THE TEAM – NON-FEDERAL PARTNER

CNMI Bureau of Environmental and Coastal Quality
Division of Coastal Resources Management

Janice E. Castro, Director



THE TEAM – USACE

Name	Role	Organization
Jeff Herzog	Project Manager	USACE – Honolulu
Brooke Schlenker	Lead Planner	USACE – Sacramento
Patricia Fontanet Rodríguez	Planner	USACE – Sacramento
Elise Jarrett	Planner	USACE – Sacramento
Lori Schultz	H&H Engineering	USACE – Sacramento
Ellie Covington	Environmental	USACE – San Francisco
John Nielsen	Economist	USACE – Sacramento
David Sobel	Economist	USACE – Sacramento
Ruzel Ednalino	Cultural	USACE – San Francisco
Chuck Mesa	Coastal Engineering	USACE – Los Angeles
Rhiannon Kucharski	Branch Chief, Civil and Public Works	USACE – Honolulu



WATERSHED ASSESSMENT – CHECK IN

Goal: Develop a Watershed Assessment to increase resiliency in the CNMI through social, economic, and environmentally sustainable development by planning for disasters, developing infrastructure, and conserving resources.

Deliverable: A conceptual plan outlining strategic investment opportunities for Federal and local agencies to increase resiliency across Saipan, Tinian, and Rota.

What's Next: Recommendations Milestone scheduled for October 2021.



WHAT'S BEEN ACCOMPLISHED?

- 3 stakeholder meetings (July and December 2020; March 2021)
 - Received stakeholder input, validated study scoping
 - Resource-sharing and data transfer
 - Identified problems and stressors in Saipan, Tinian, and Rota.
- USACE Shared Vision Milestone (January 2021)
 - Received approval on study progress and path forward
- Monthly meetings with Federal Partners to limit redundancy and streamline resources in recovery effort
- Ongoing agency coordination with local and Federal Partners



EXERCISE: RISK ASSESSMENT

Purpose:

1. Rank consequences for problem stressors
2. Mark locations where stressor consequences are higher
3. Identify types of recommendations that could lessen consequences

Overview:

- Four focus areas (i.e. the overarching problems) and their stressors have been identified. Using the "annotation" function in Webex, stakeholders can rank each stressor in terms of consequence and mark their location, to help USACE gage the level of risk.
- Stakeholders will then provide input on which types of recommendations should be applied for each stressor, to give USACE an idea of which types of recommendations to include in the Watershed Assessment.



EXERCISE: RISK ASSESSMENT

Focus Areas & Stressors:

1. Water Quality and Supply

- Saltwater intrusion
- Water leaks in distribution system
- Unmetered water use
- Over pumping of GW
- Drought
- Contaminants in GW
- Untreated runoff
- Seepage from leaking septic tanks

2. Tropical Cyclones

- Loss of power
- Flash flooding
- Coastal flooding
- Severe winds

3. Coastal Hazards

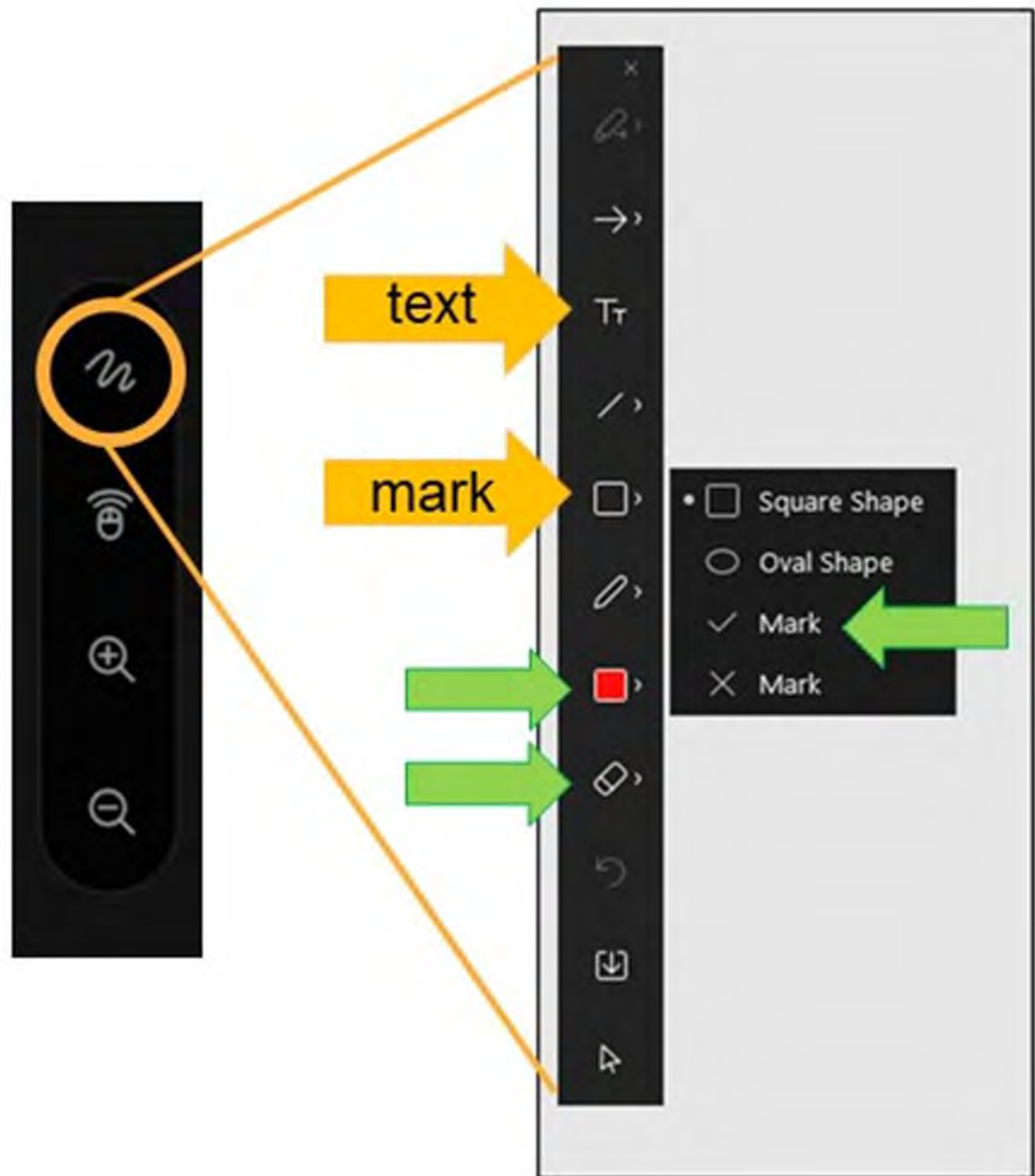
- Increasing water temperatures
- Coral bleaching
- Sea level rise
- Water quality impairments
- Poor land use practices
- Erosion
- Sedimentation
- Surface runoff

4. Ecological Threats

- Invasive species
- Wildfires
- Poor land use practices



HOW TO ANNOTATE IN WEBEX



Favorite Ice Cream Flavor	
Only cheese	
Pepperoni	  
Pineapple	
Olive	
Anchovies	
Other??	      garlic

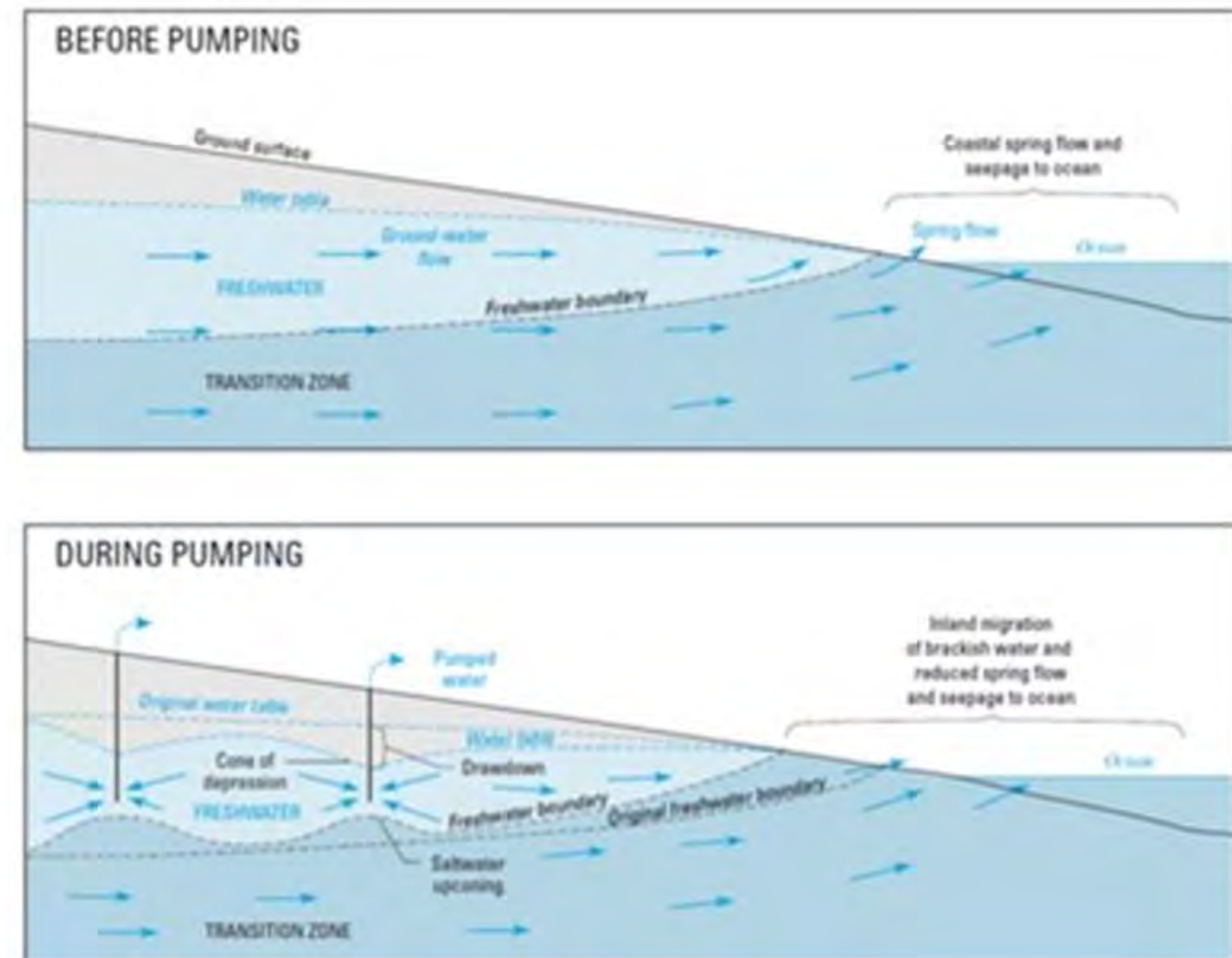
peppers

figs

FOCUS AREA 3: WATER QUALITY & SUPPLY

Stressors:

1. Saltwater intrusion
2. Water leaks in distribution system
3. Unmetered water use
4. Over pumping of GW
5. Drought
6. Contaminants in GW
7. Untreated runoff
8. Seepage from leaking septic tanks



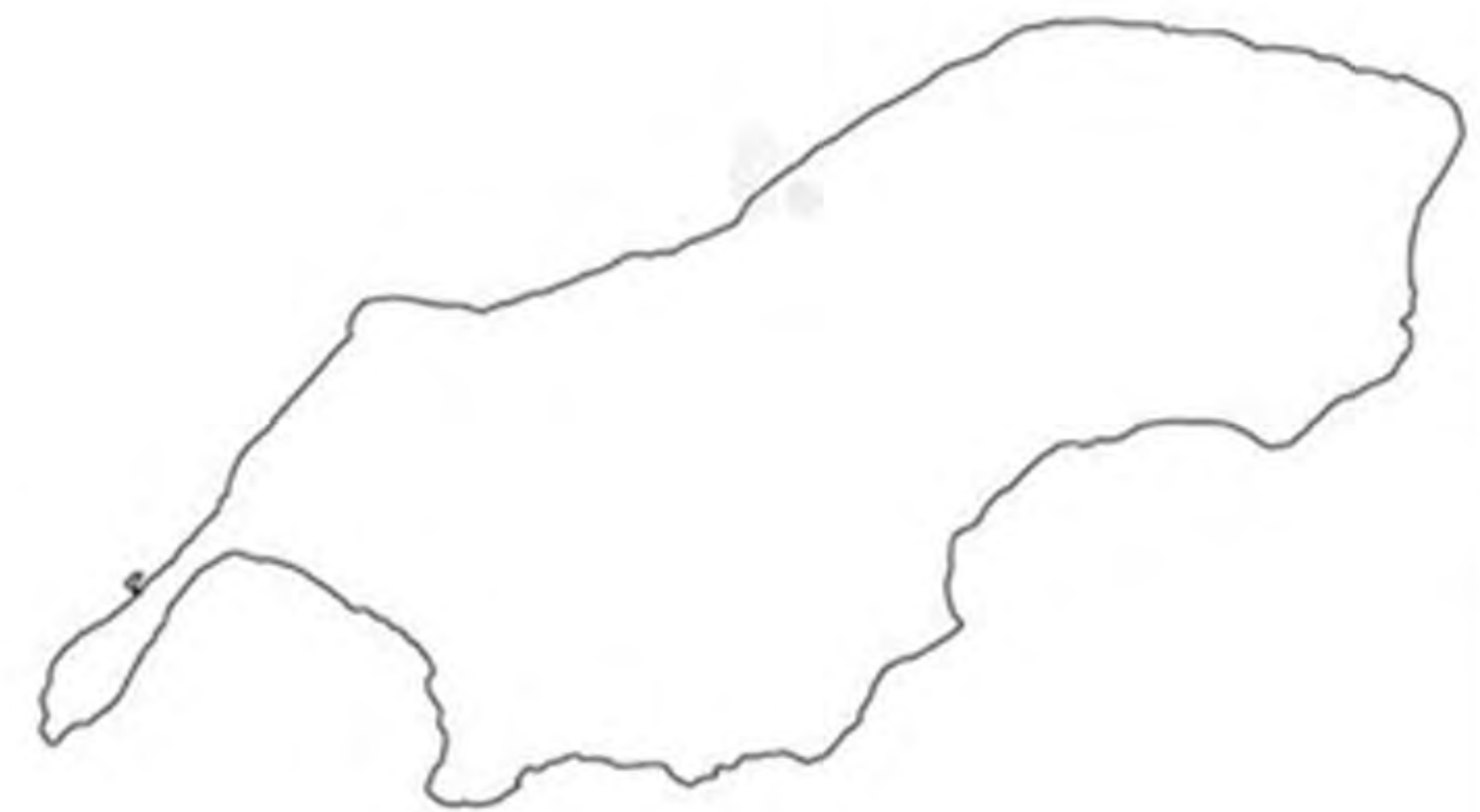
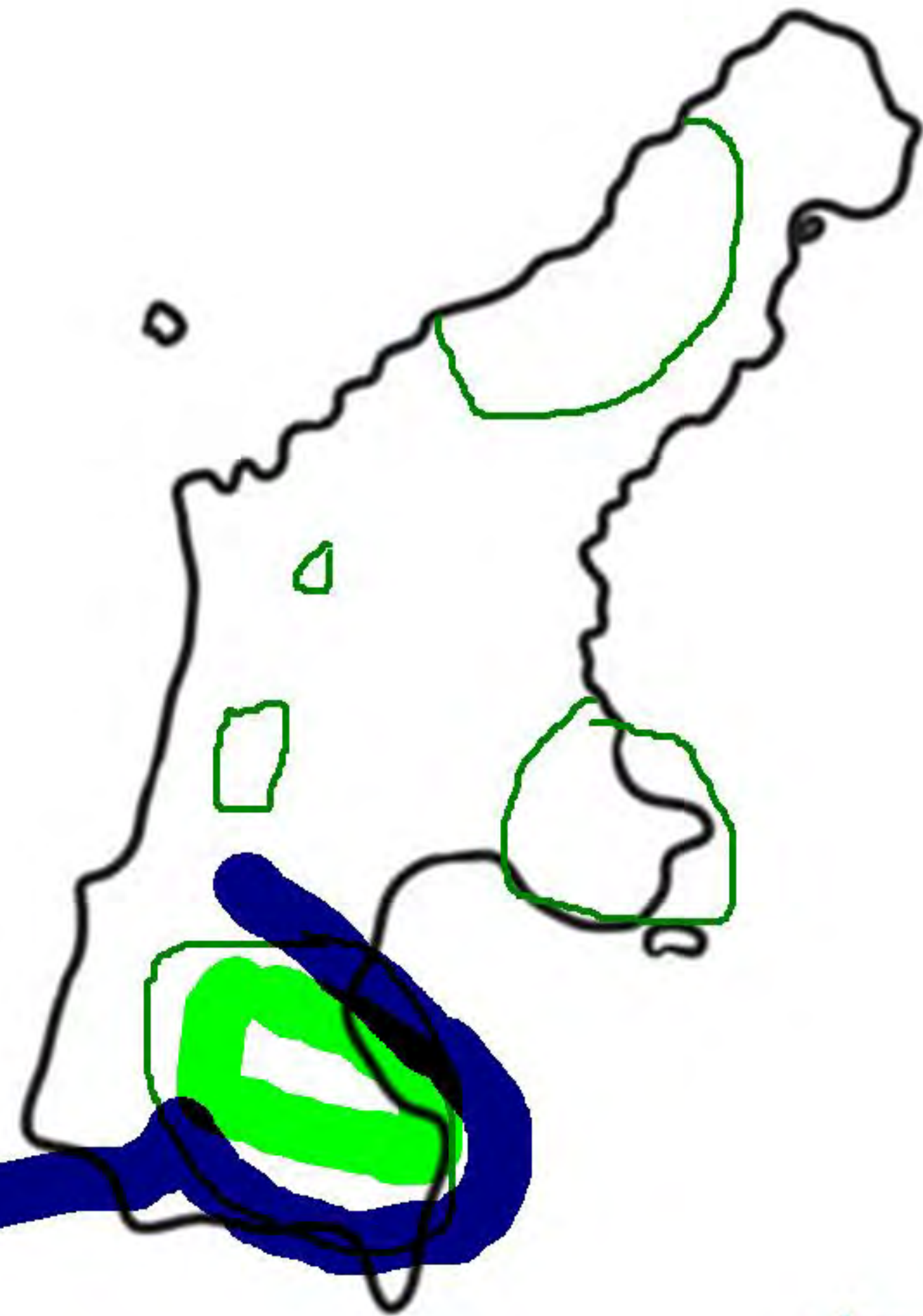
Source: USGS

FOCUS AREA: WATER QUALITY & SUPPLY

1. Saltwater intrusion

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



Everywhere

where the wells are.

1. Saltwater intrusion

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other



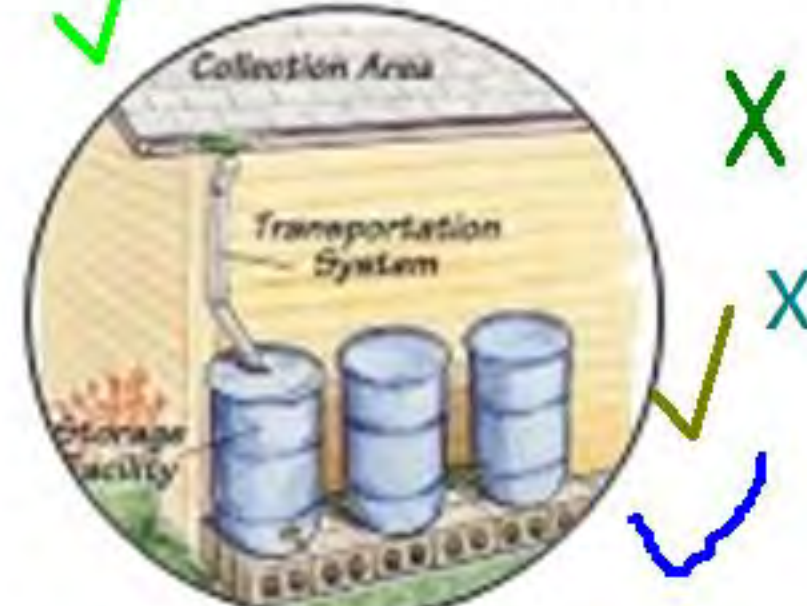
Need funding for shovel-ready plan

Policy



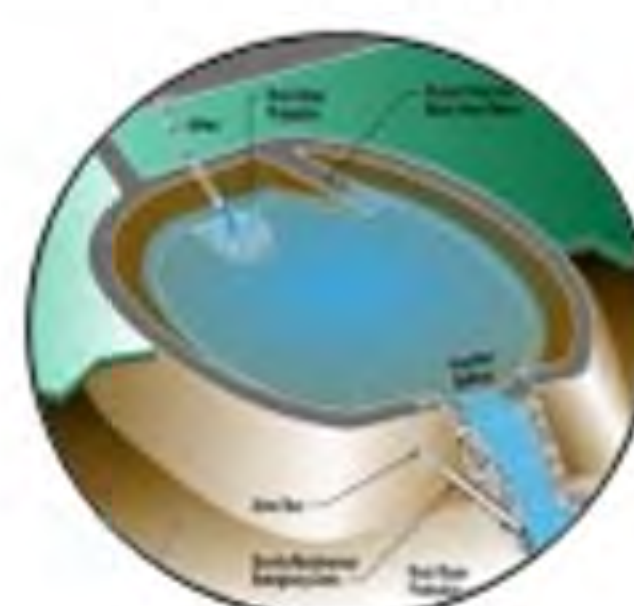
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural



(E.g. Install sediment capture tanks)

FOCUS AREA: WATER QUALITY & SUPPLY

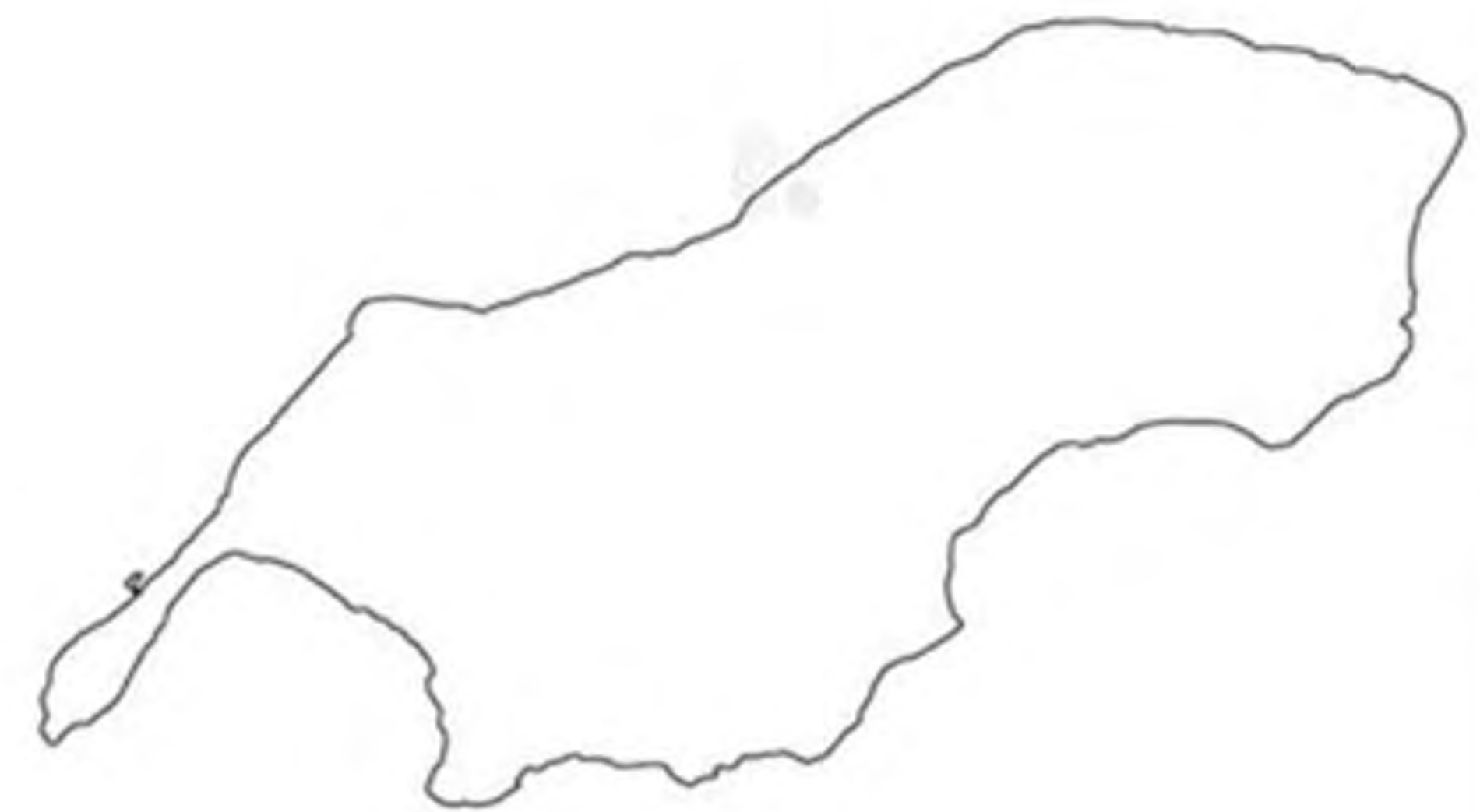
2. Water leaks in distribution system

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



agriculture areas



Everywhere



2. Water leaks in distribution system

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other



Policy



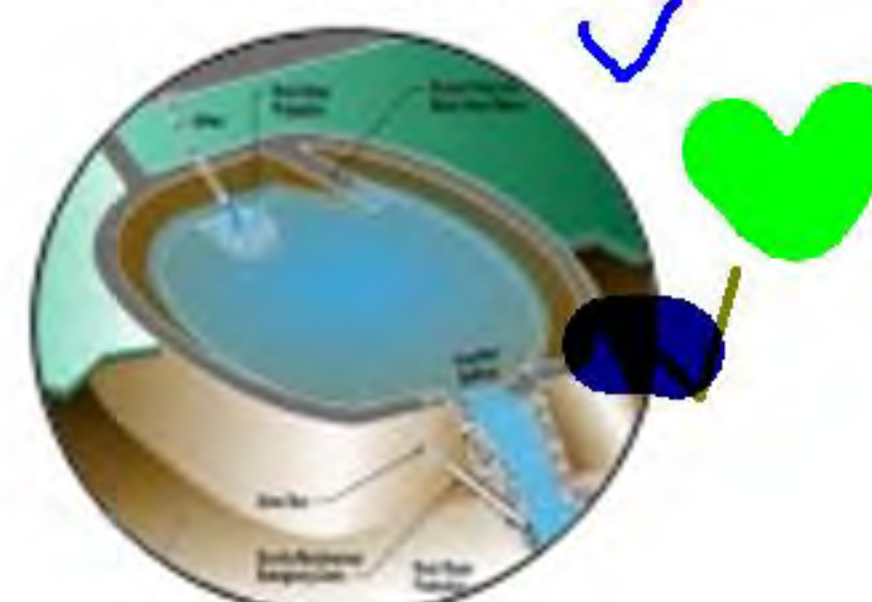
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural



(E.g. Install sediment capture tanks)



Need funding for shovel-ready plan



US Army Corps of Engineers.



FOCUS AREA: WATER QUALITY & SUPPLY

3. Unmetered water use

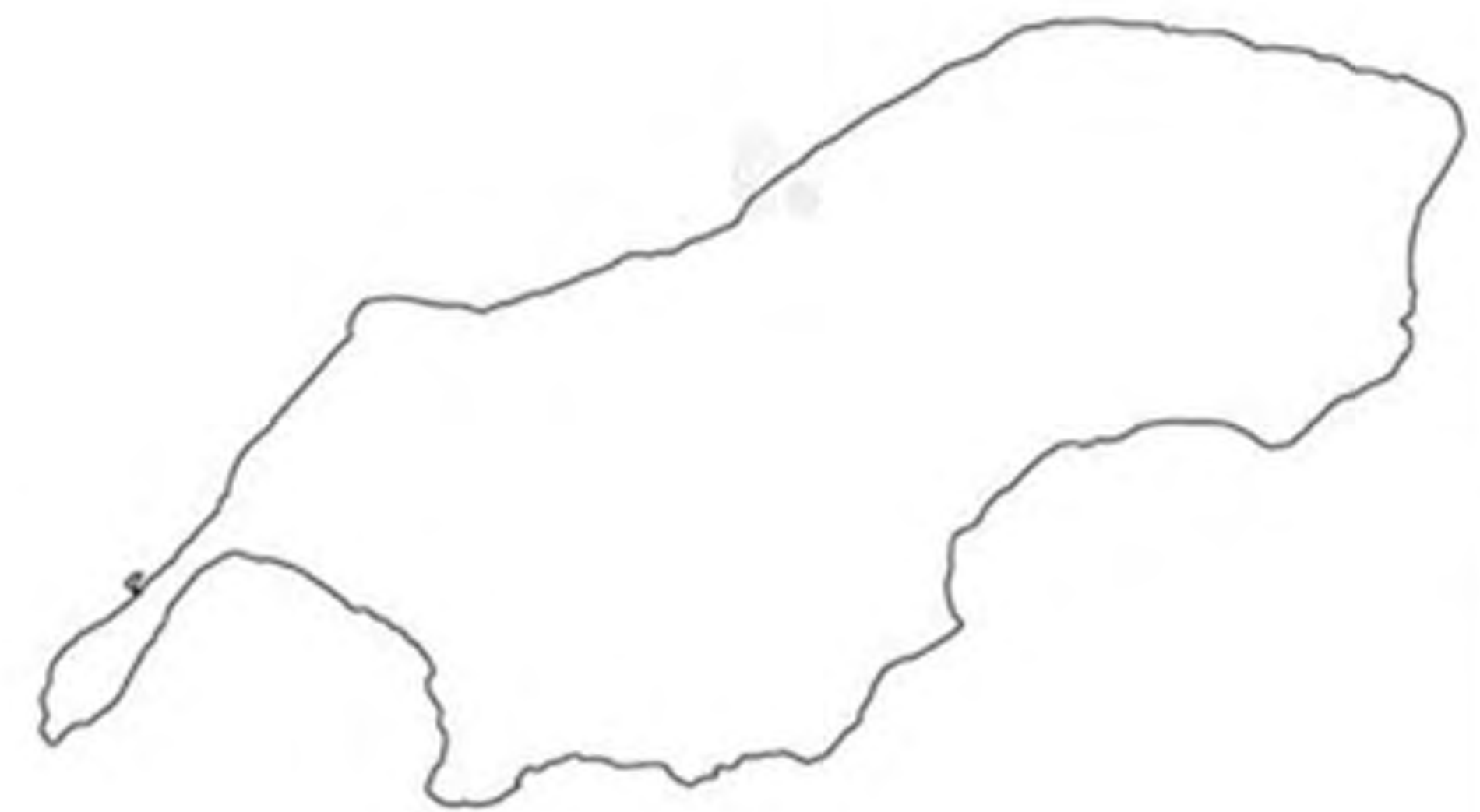
Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?

Farm areas.



government agencies

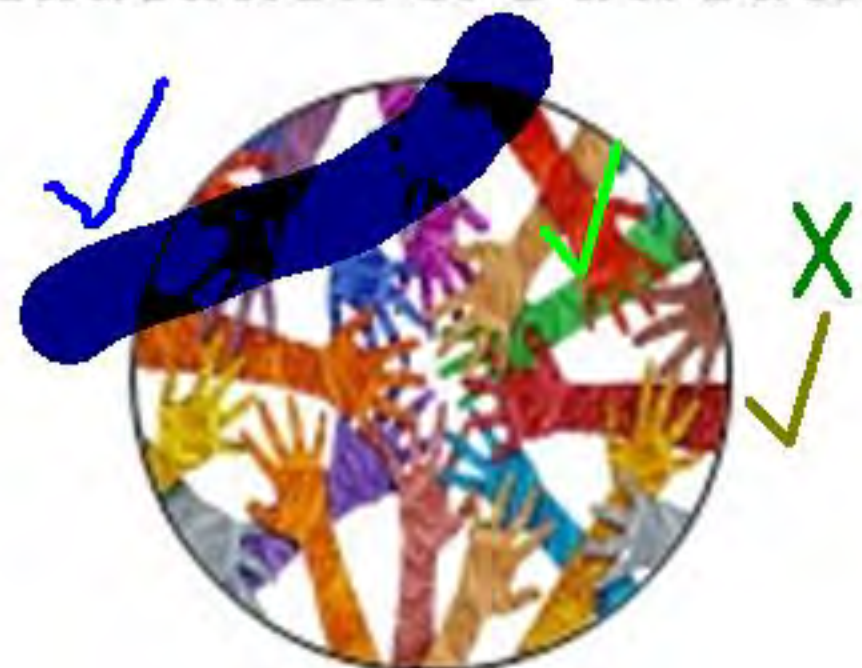


Everywhere

3. Unmetered water use

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



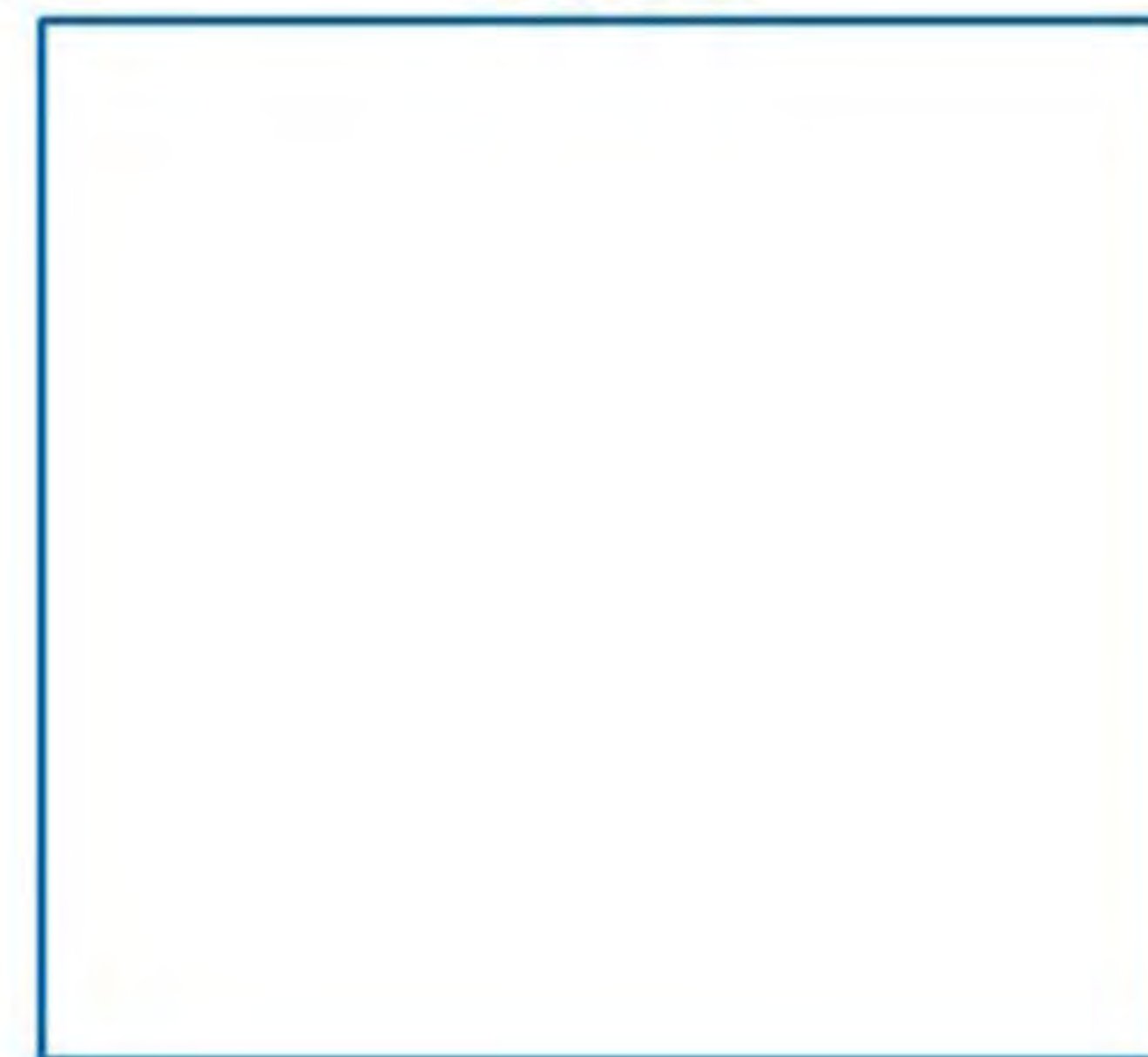
(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other



Need funding for shovel-ready plan

Policy



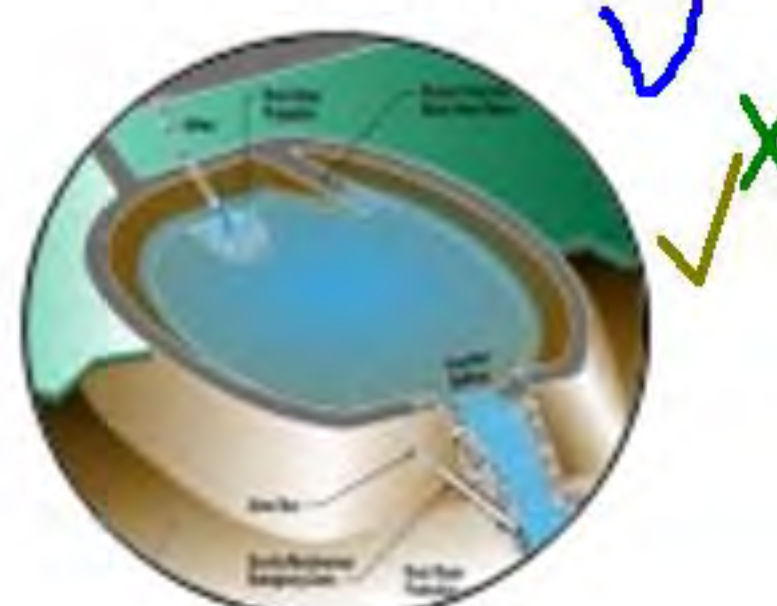
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural



(E.g. Install sediment capture tanks)

FOCUS AREA: WATER QUALITY & SUPPLY

4. Over pumping GW

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

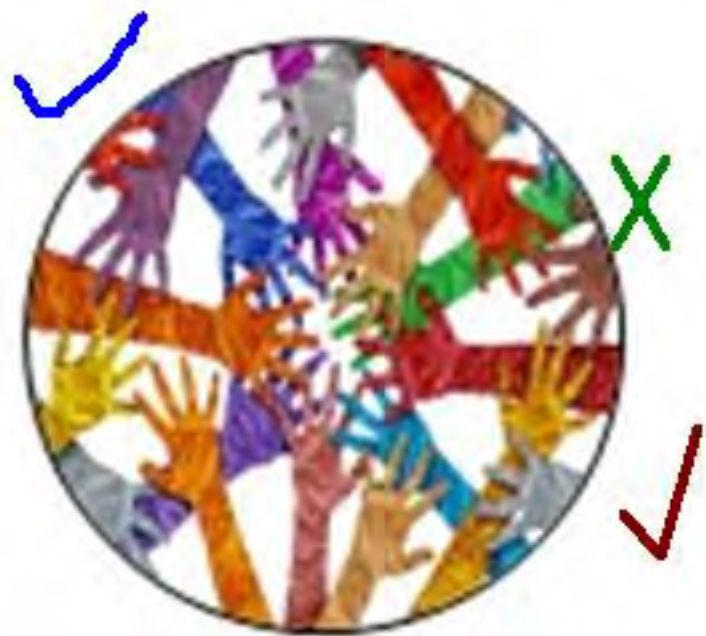
Where are consequences highest?



4. Over pumping GW

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other

Operator education.
CUCoperation management

Policy



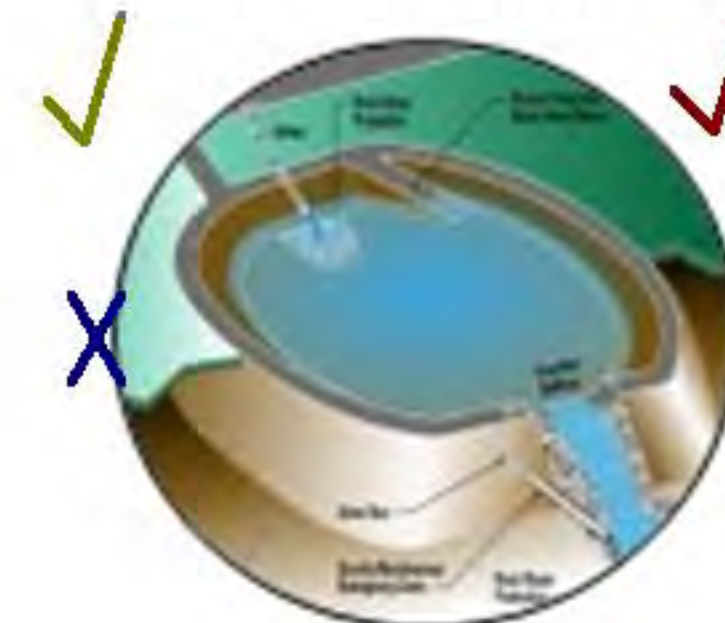
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural



(E.g. Install sediment capture tanks)

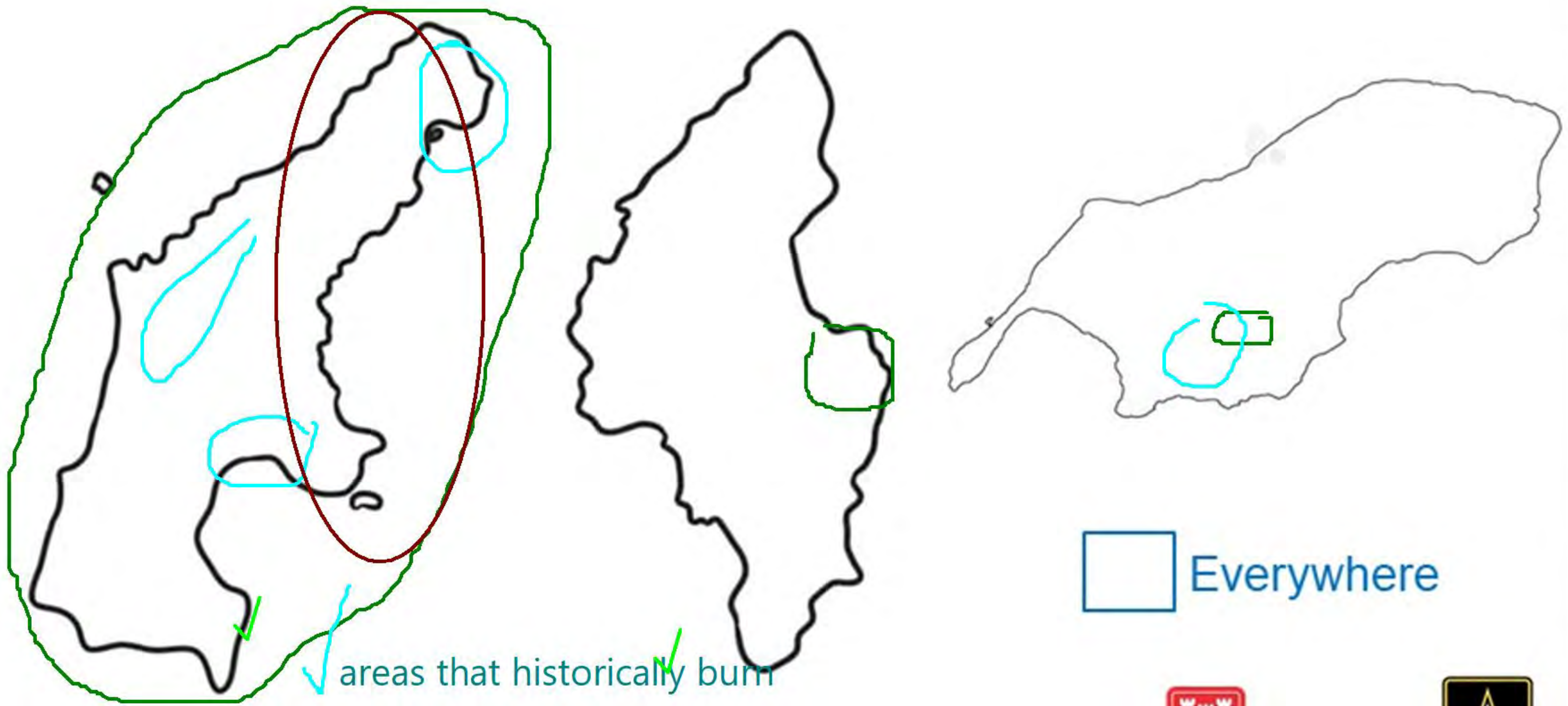
X Need funding for shovel-ready plan

FOCUS AREA: WATER QUALITY & SUPPLY

5. Drought

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



5. Drought

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other



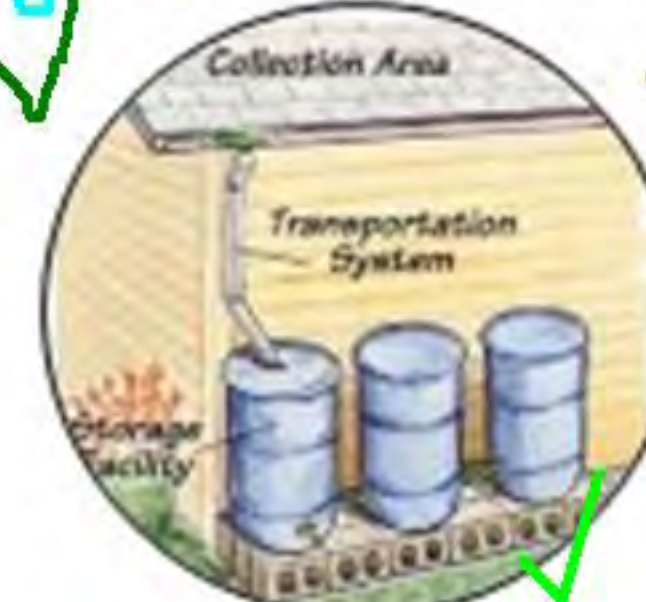
Need funding for shovel-ready plan

Policy



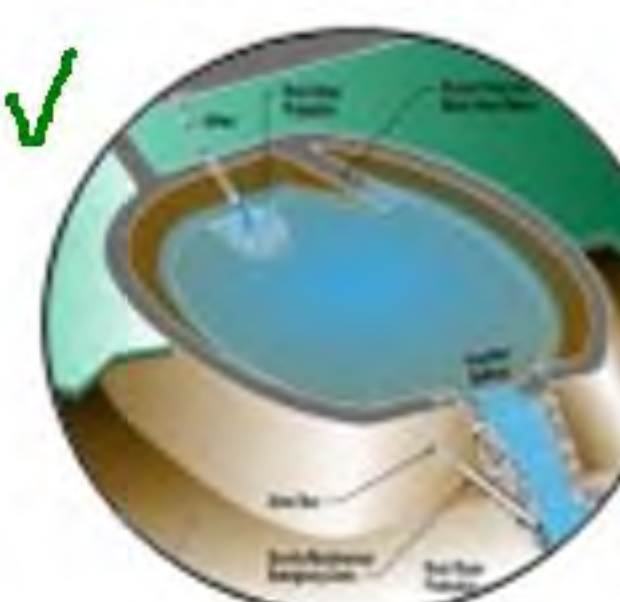
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural

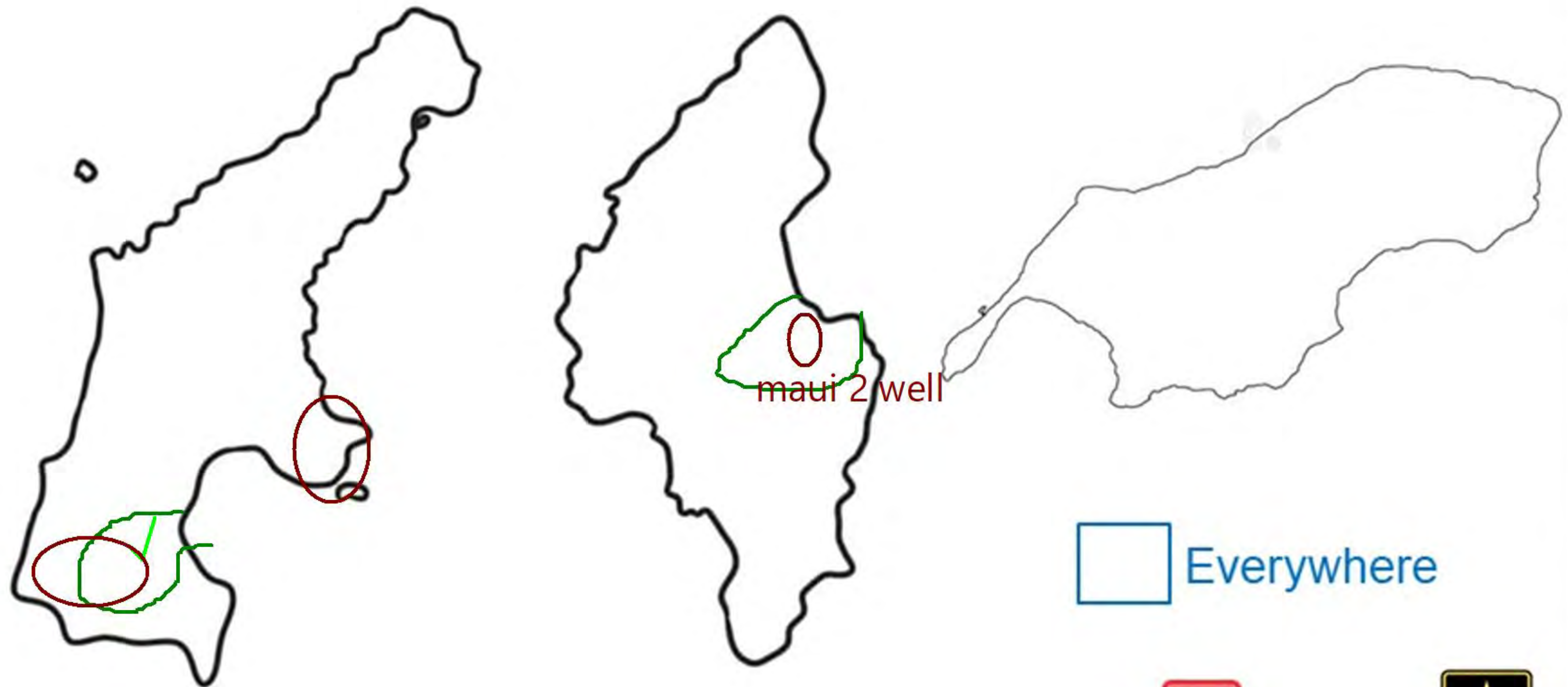


(E.g. Install sediment capture tanks)

6. GW contaminants

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
		X ✓	X ✓	

Where are consequences highest?



6. GW contaminants

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



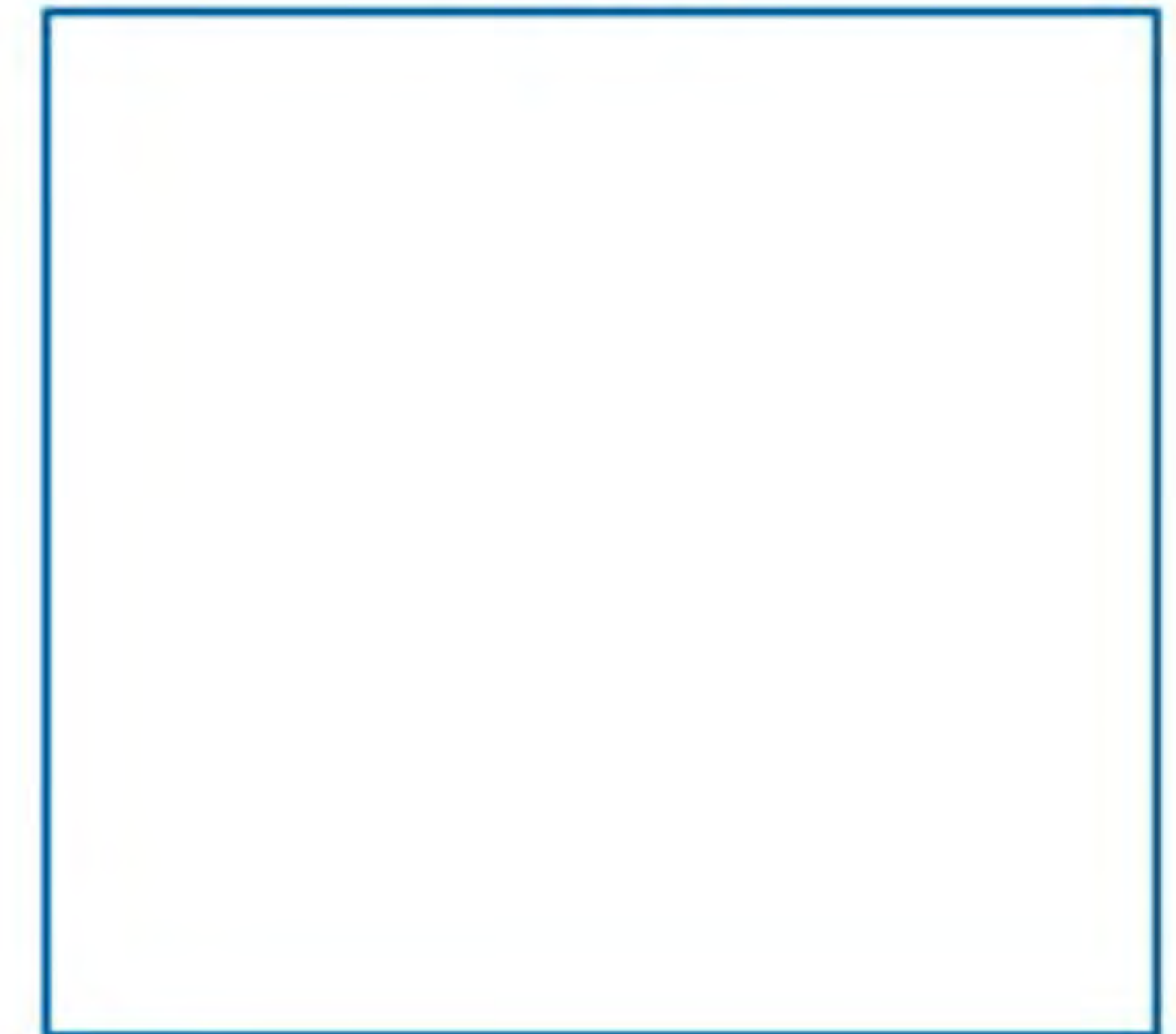
(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other



Need funding for shovel-ready plan

Policy



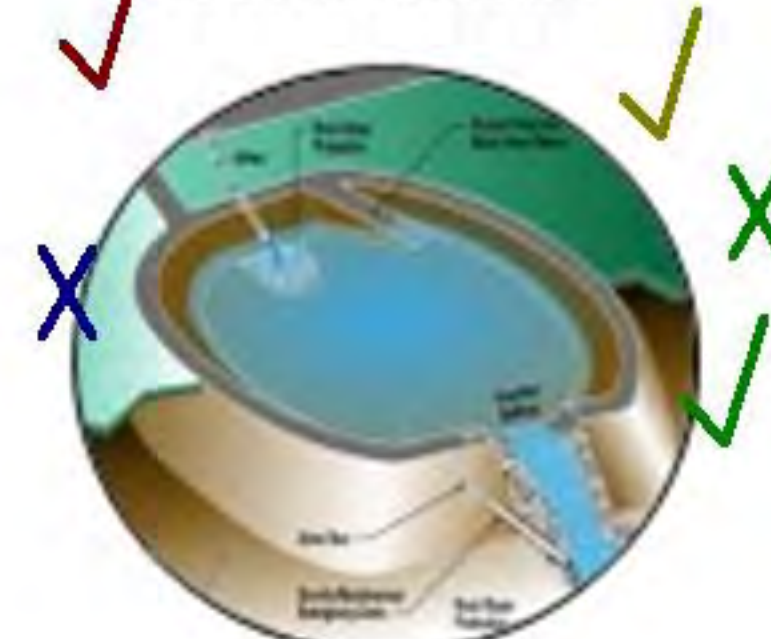
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural



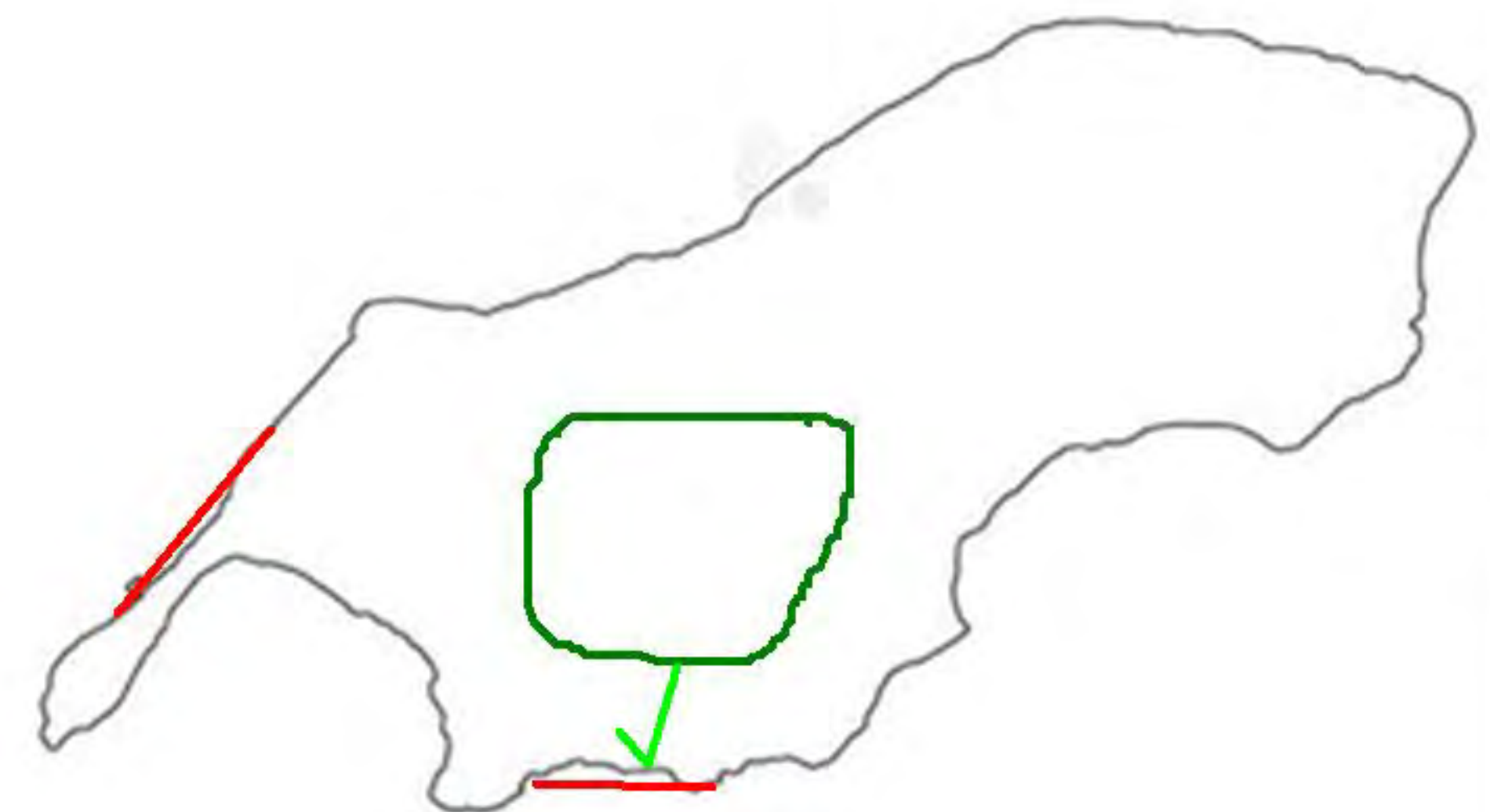
(E.g. Install sediment capture tanks)

7. Untreated runoff

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

✓ ✗ ✓ ✓
✗

Where are consequences highest?



✗ Everywhere

areas with high septic system concentrations

7. Untreated runoff

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



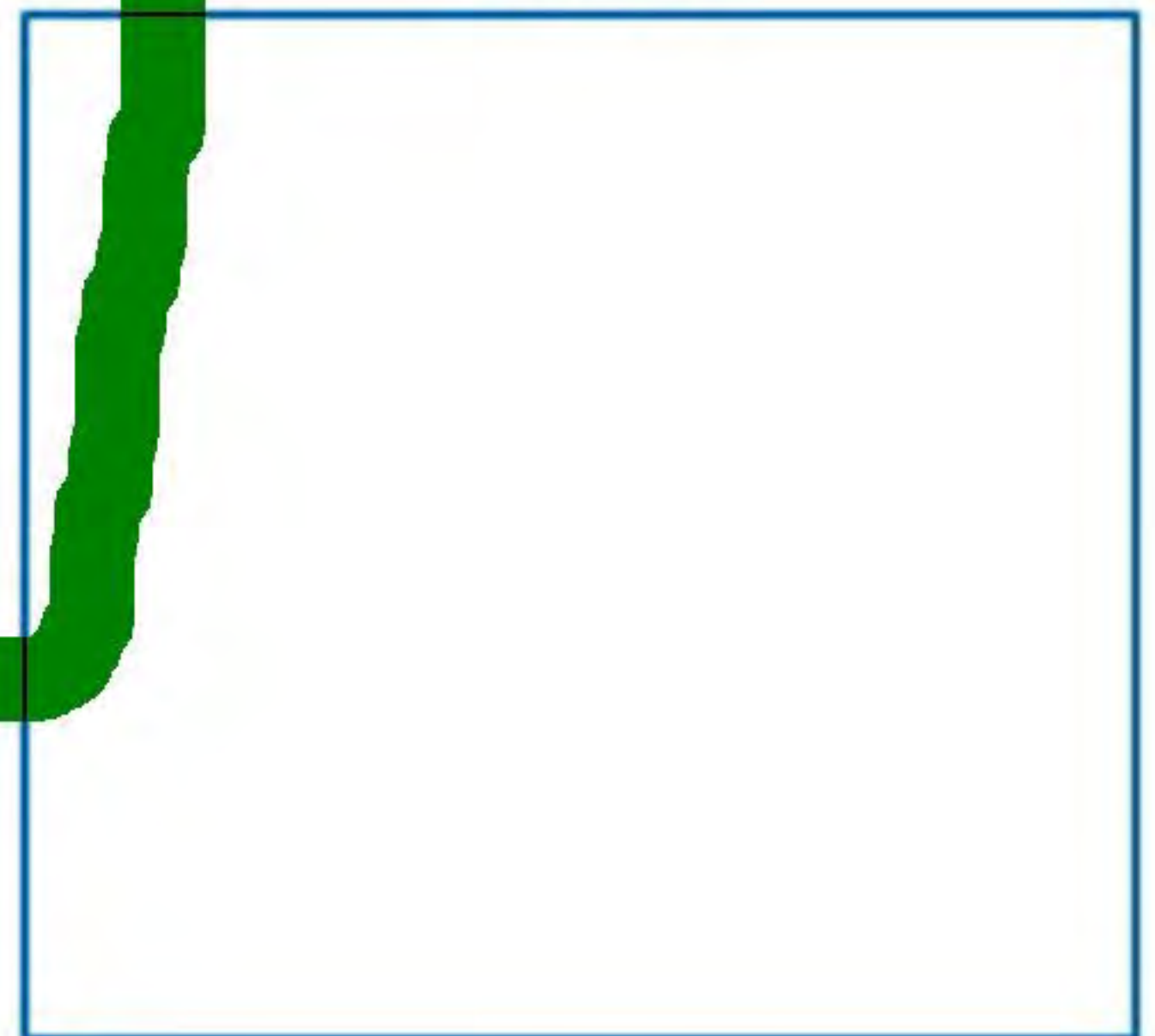
(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other



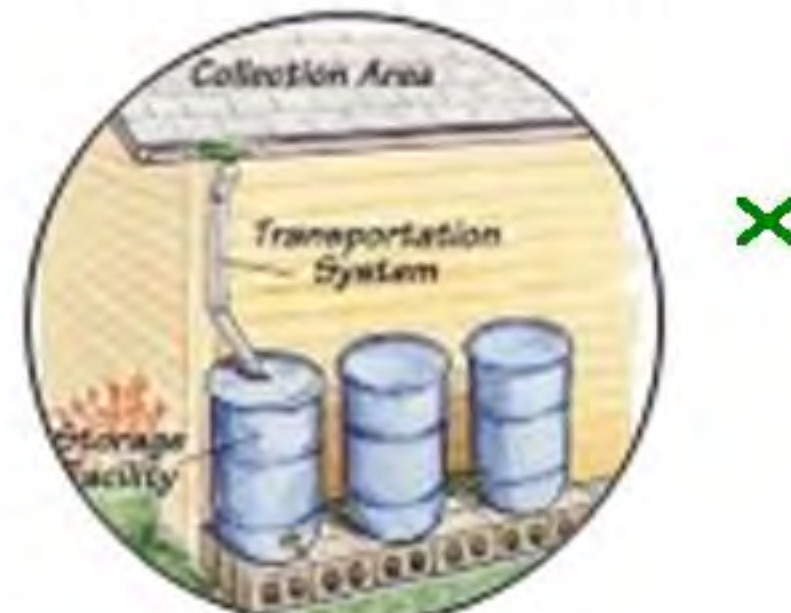
 Need funding for shovel-ready plan

Policy



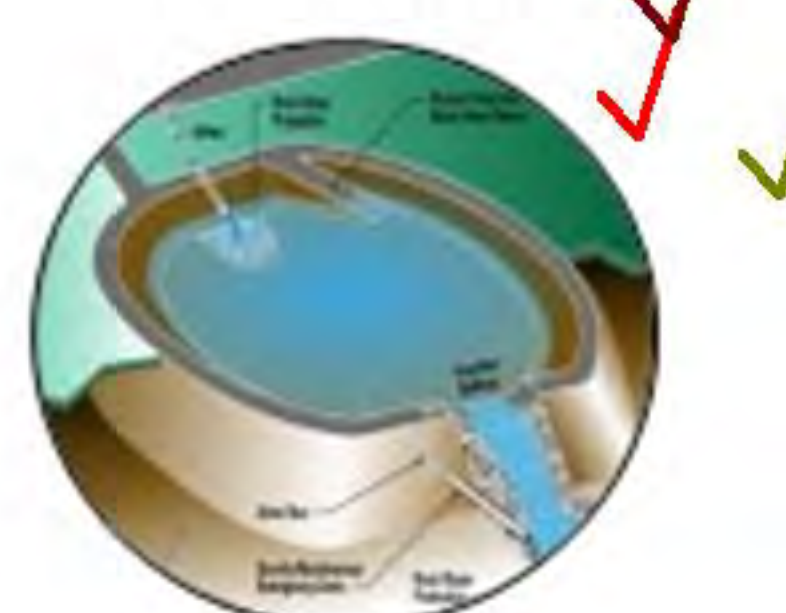
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural



(E.g. Install sediment capture tanks)



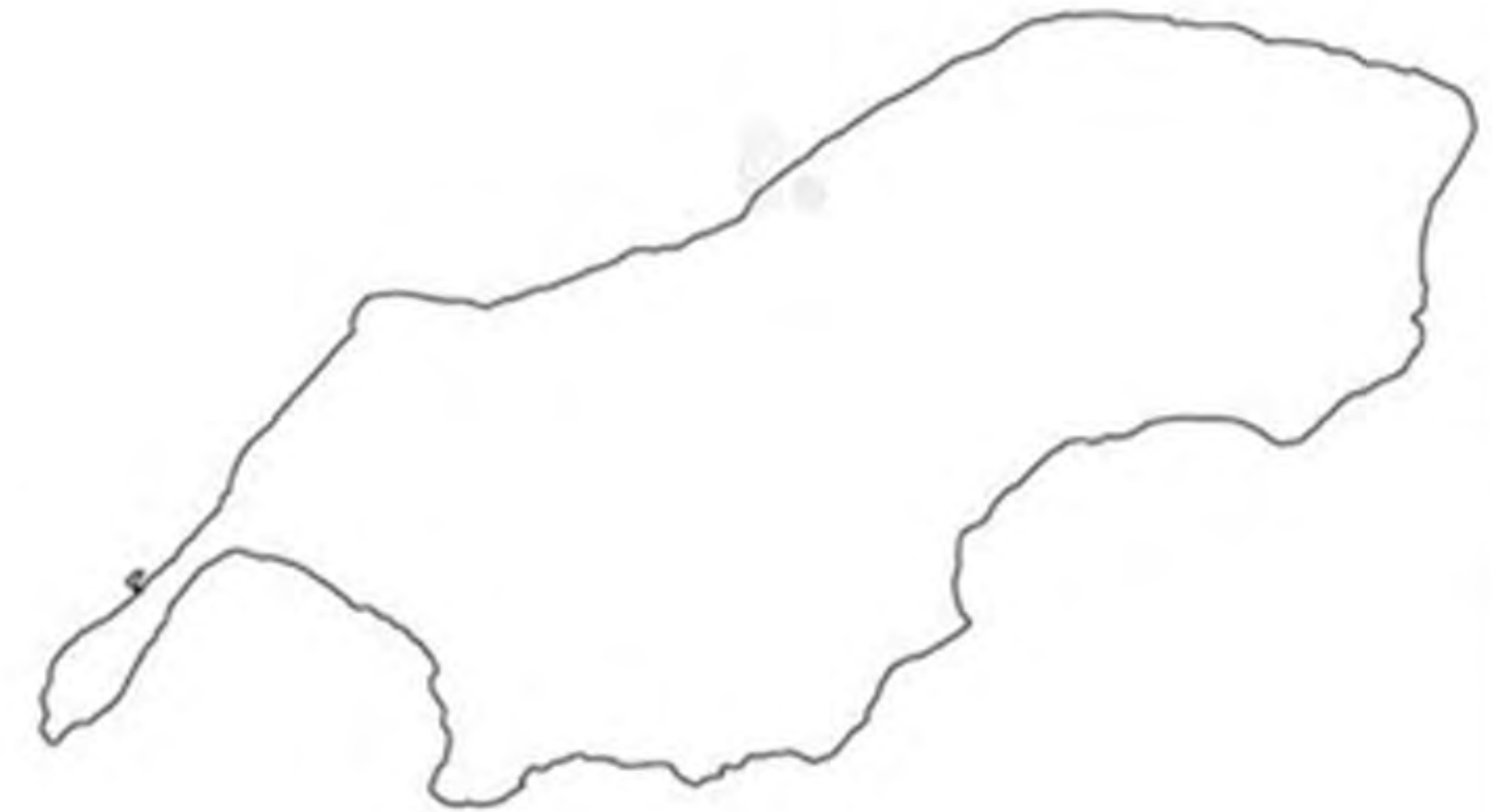
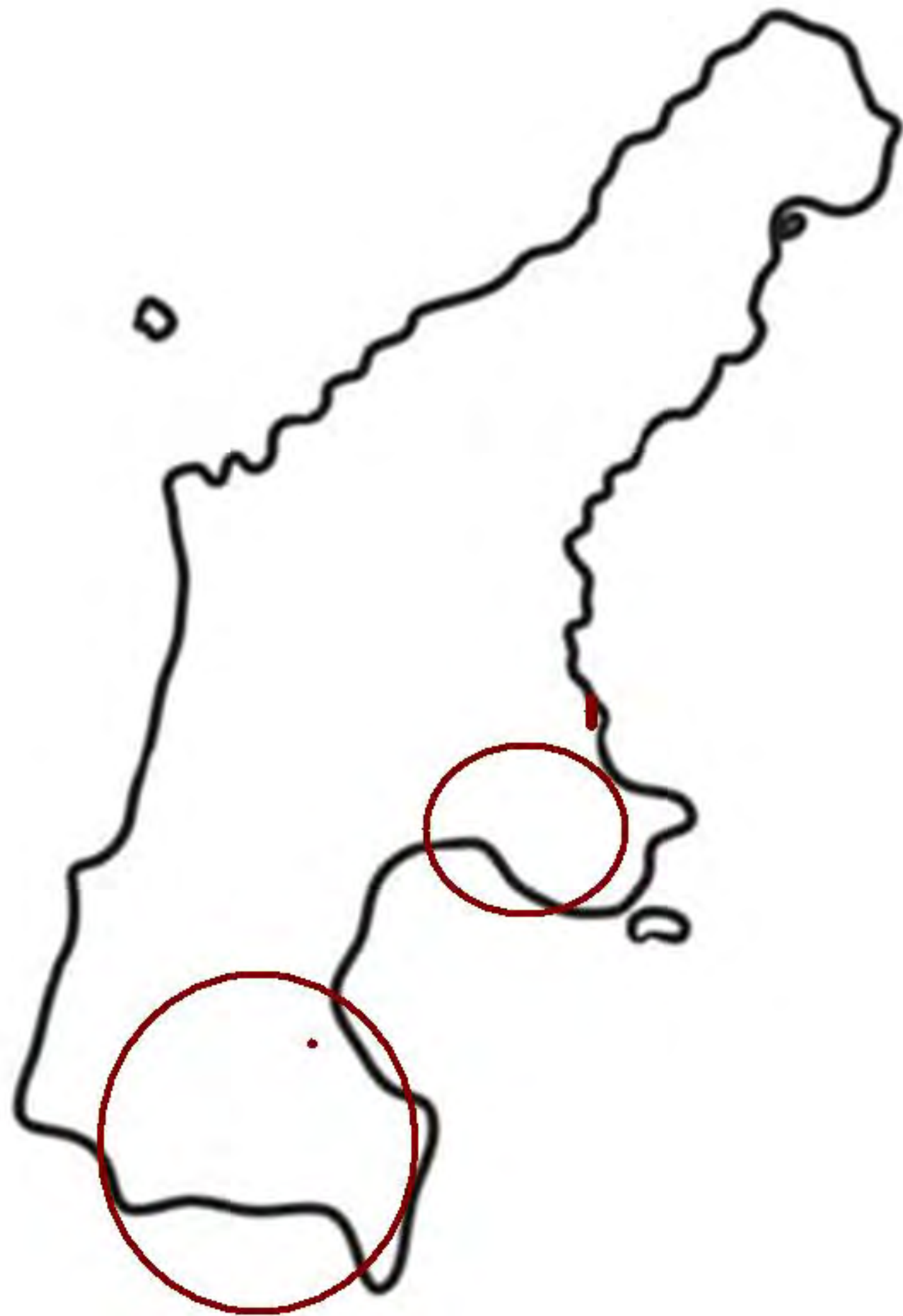
US Army Corps of Engineers.



8. Seepage from leaking septic tanks

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



 Everywhere

8. Seepage from leaking septic tanks

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



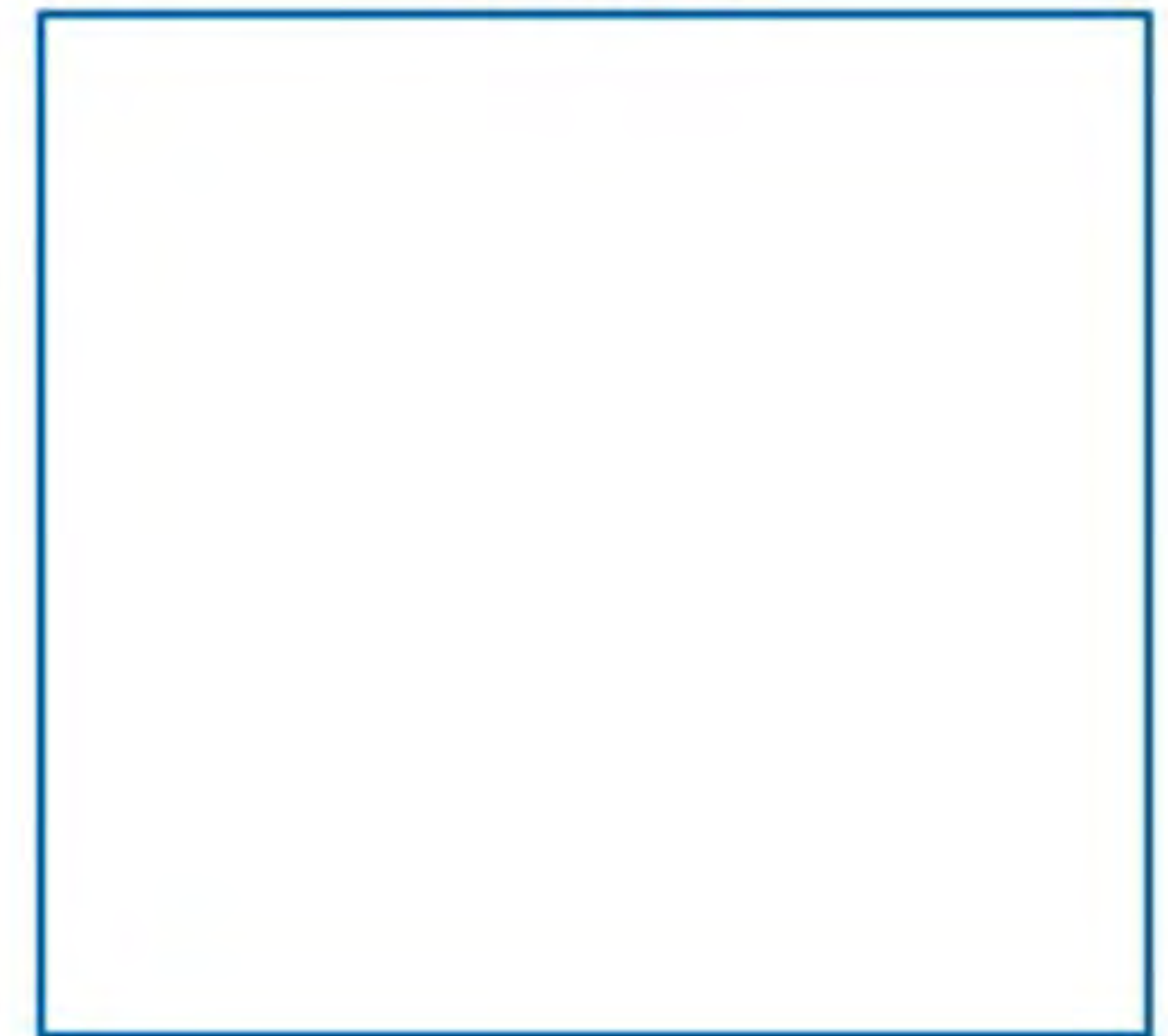
(E.g. Improved data management)

Natural & Nature-Based



(E.g. Wetland creation)

Other



Policy



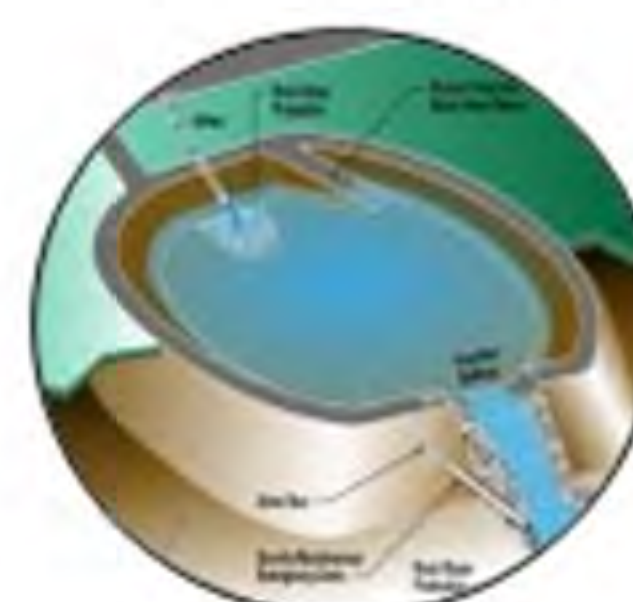
(E.g. Increase enforcement)

Non-structural



(E.g. Rainwater catchment systems)

Structural



(E.g. Install sediment capture tanks)

Need funding for shovel-ready plan



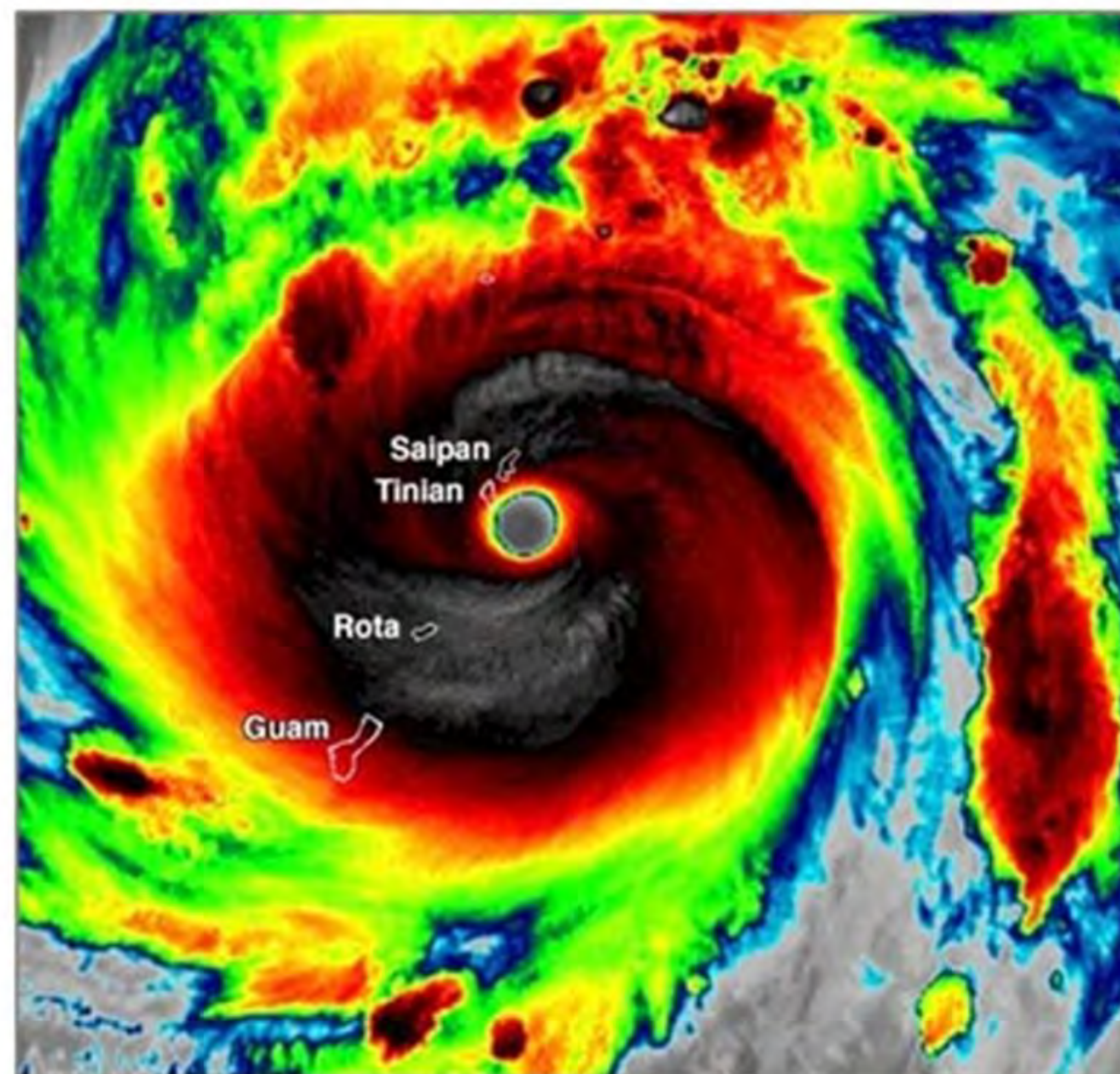
US Army Corps of Engineers.



FOCUS AREA 4: TROPICAL CYCLONES

Stressors:

1. Loss of power
2. Flash flooding
3. Coastal flooding
4. Severe winds

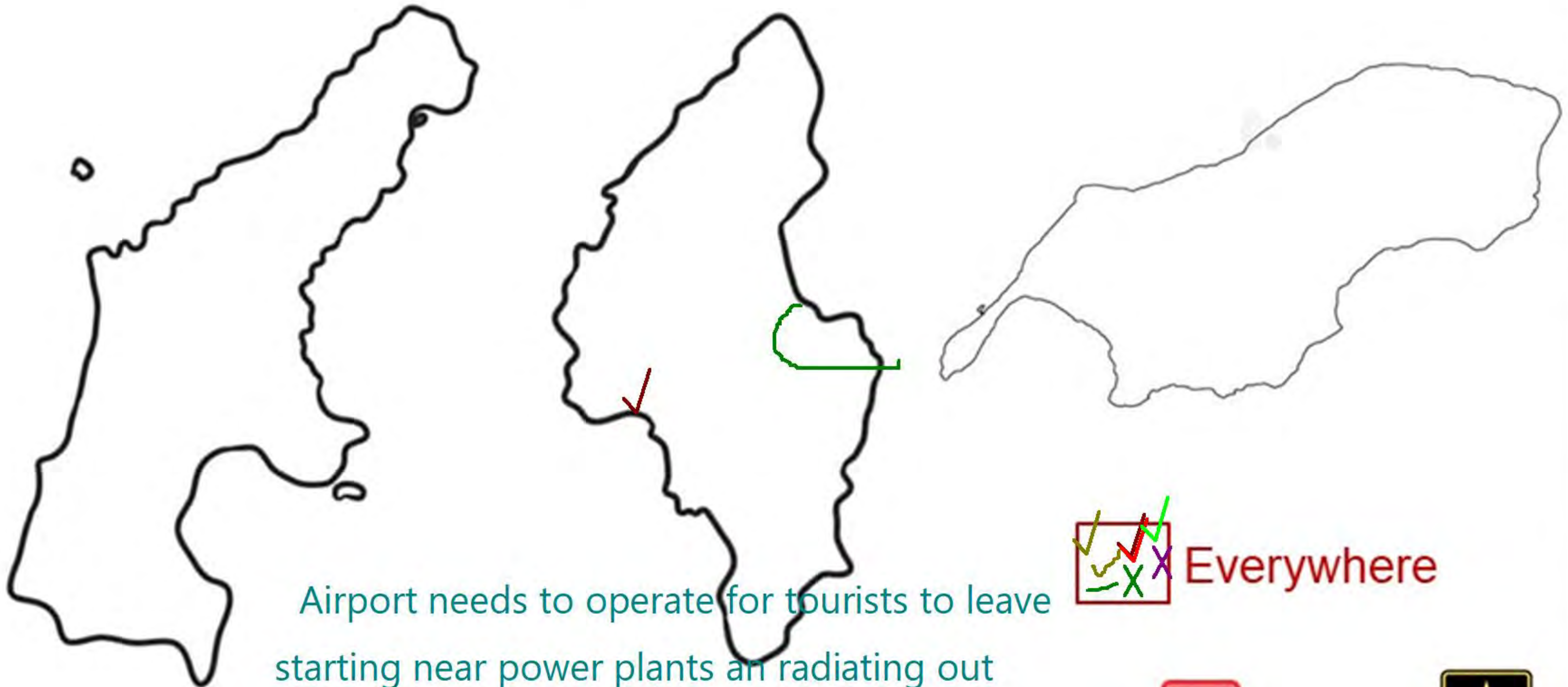


FOCUS AREA: TROPICAL CYCLONES

1. Loss of power

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



Airport needs to operate for tourists to leave
starting near power plants an radiating out
Power to utilities, drinking and waste water

FOCUS AREA: TROPICAL CYCLONES

1. Loss of power

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other



Need funding for shovel-ready plan



(E.g. Building codes)

Non-structural



(E.g. warning systems)

Structural



(E.g. floodwall)



US Army Corps of Engineers.

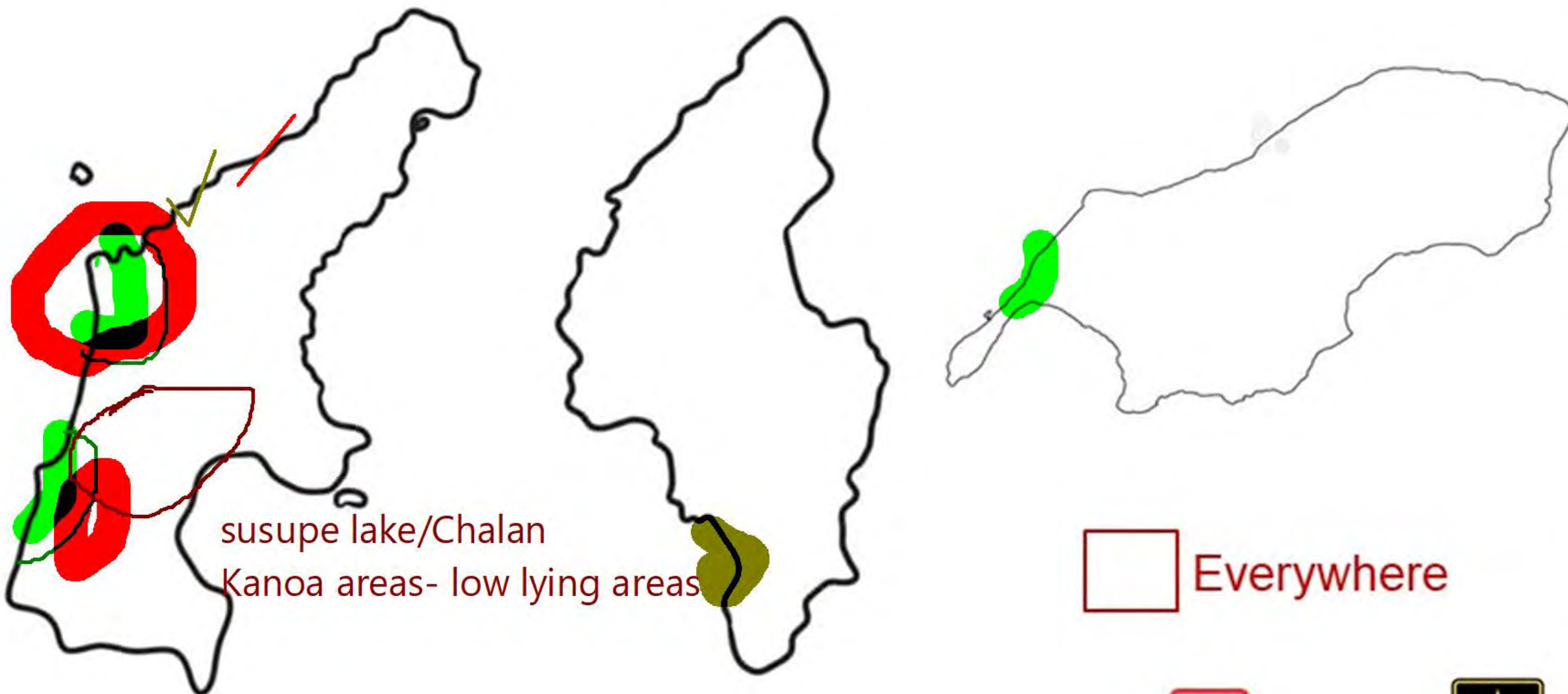


FOCUS AREA: TROPICAL CYCLONES

2. Flash flooding

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



2. Flash flooding

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

improved stormwater drainage
funding for maintenance

Policy



(E.g. Building codes)

Non-structural



(E.g. warning systems)

Structural



(E.g. floodwall)

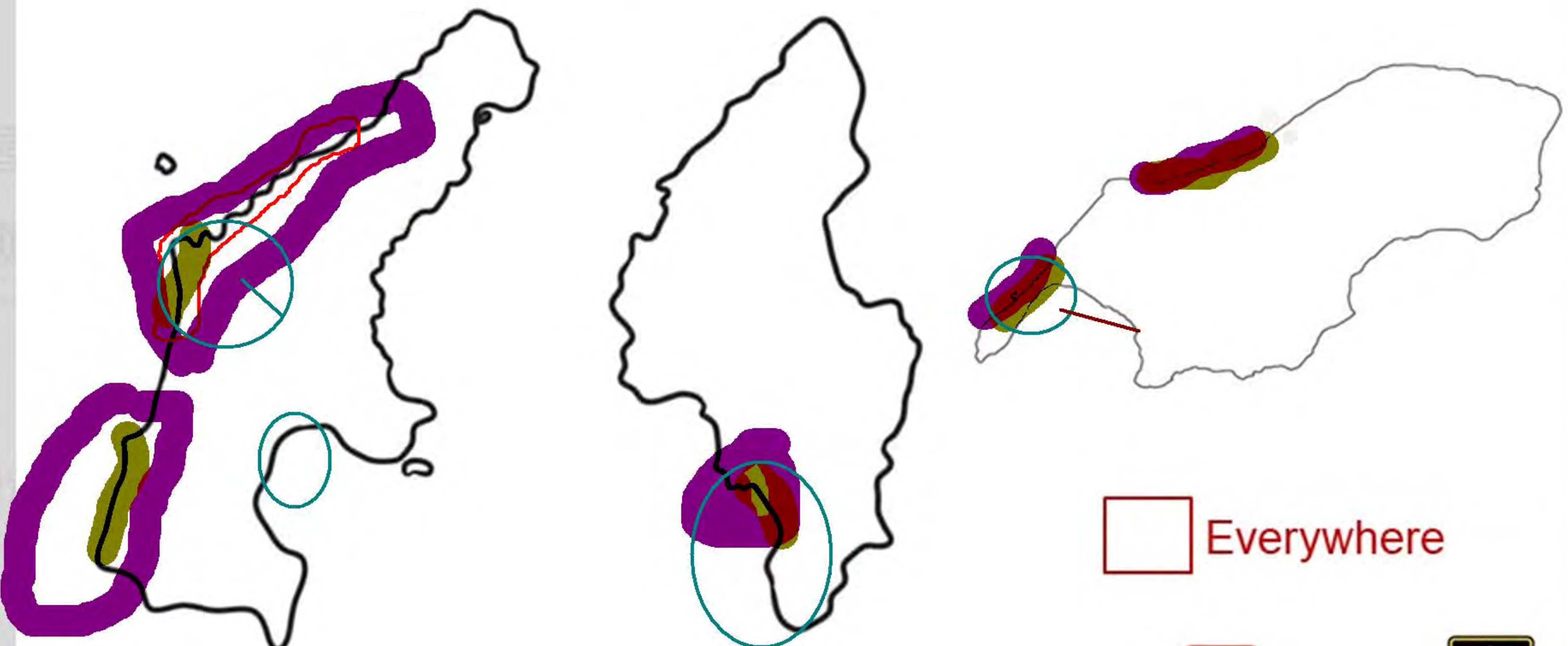
Need funding for shovel-ready plan

FOCUS AREA: TROPICAL CYCLONES

3. Coastal flooding

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?



3. Coastal flooding

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other



 Need funding for shovel-ready plan

Policy



(E.g. Building codes)

Non-structural



(E.g. warning systems)

Structural



(E.g. floodwall)



US Army Corps of Engineers.

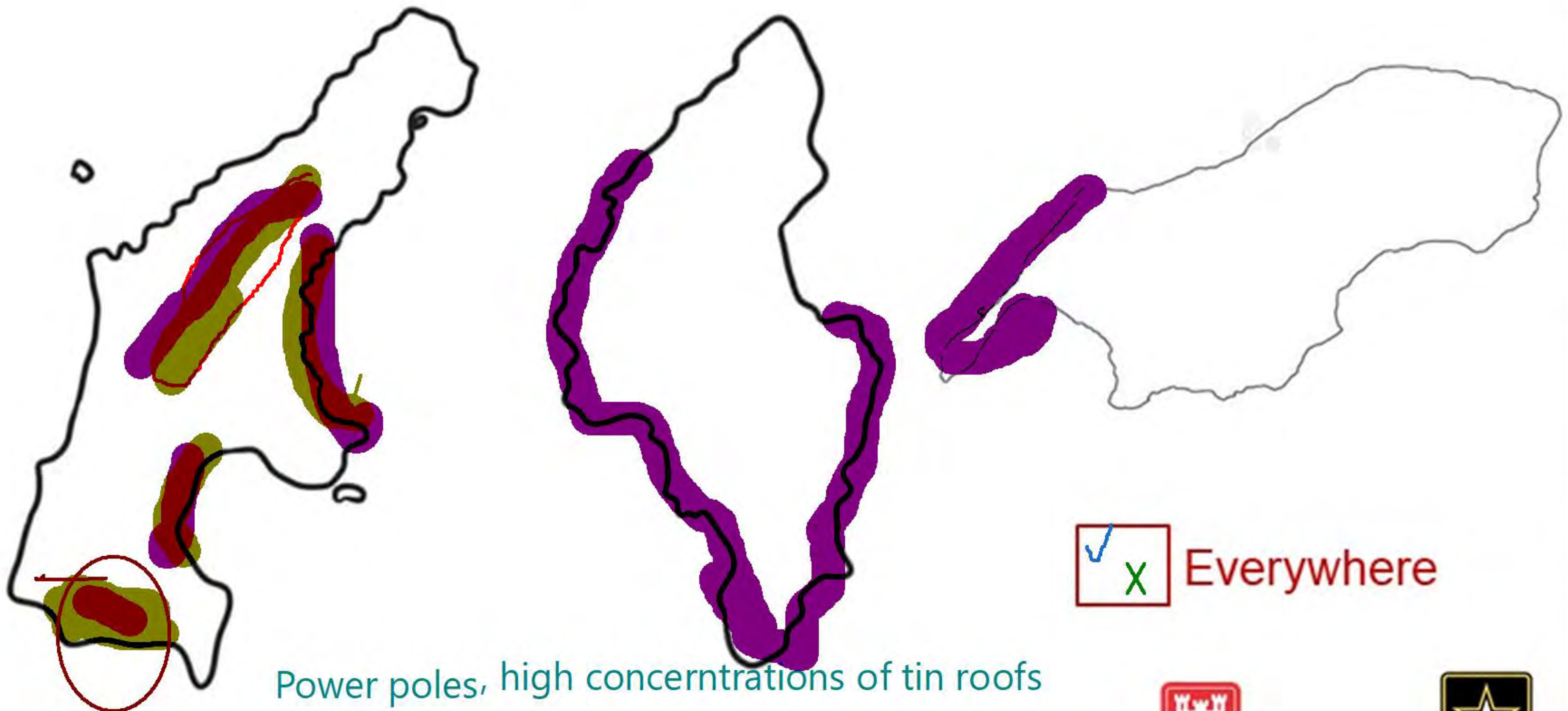


FOCUS AREA: TROPICAL CYCLONES

4. Severe winds

Consequence				
Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5

Where are consequences highest?

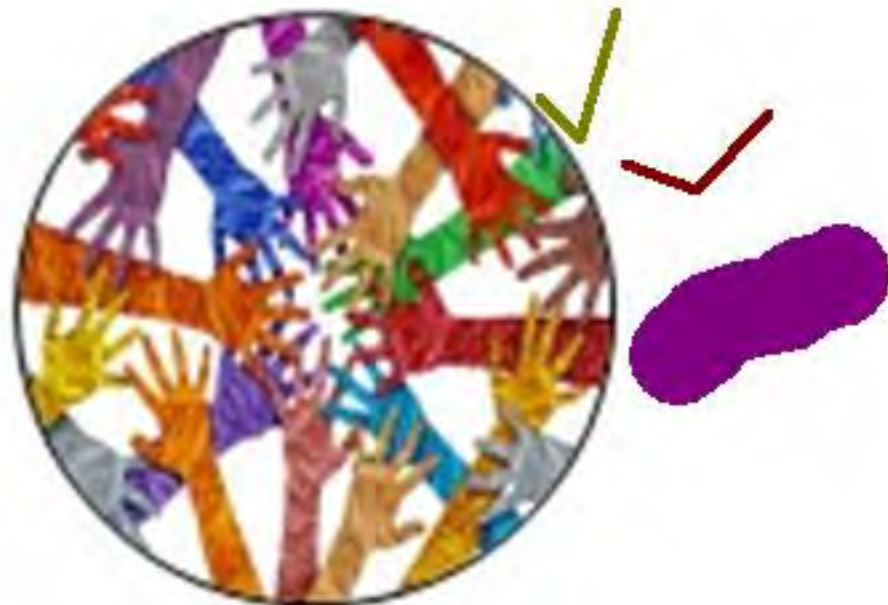


Power poles, high concentrations of tin roofs

4. Severe winds

What is needed in the near-term to lessen the consequences?

Education & Outreach



(E.g. information campaigns at schools)

Planning



(E.g. planning studies)

Natural & Nature-Based



(E.g. Wetland creation)

Other

Strong leadership,
Political will to do it differently
For revegetation - typhoon-resilient tree species

Policy



(E.g. Building codes)

Non-structural



(E.g. warning systems)

Structural



(E.g. floodwall)

Need funding for shovel-ready plan



CLOSING REMARKS



The Commonwealth of the Northern Mariana Islands

Final Watershed Plan

APPENDIX A - Attachment 5

Formal Public Review Comments
Received

July 2022



**US Army Corps
of Engineers**®
Honolulu District





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OFFICE OF THE GOVERNOR
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DIRECTOR

CHRISTOPHER A. CONCEPCION
DEPUTY DIRECTOR

April 15, 2022

Elise Jarrett
Water Resources Planner
U.S. Army Corps of Engineers
1325 J Street
Sacramento, CA 95814

Sent via email: elise.m.jarrett@usace.army.mil and CNMIWA@usace.army.mil

Re: Response to Request for Comments on Draft Post Disaster Watershed Assessment Report

Dear Ms. Jarrett,

The Office of Planning and Development (OPD) appreciates the U.S. Army Corps of Engineers' (USACE) ongoing engagement and support in the development of the Draft Post Disaster Watershed Assessment Report (WA Report) for the Commonwealth of the Northern Mariana Islands (CNMI). Given that it is OPD's mandate under Public Law 20-20 to coordinate planning processes and serve as a clearinghouse for all information related to development, planning, and resource use in the CNMI, OPD appreciates this opportunity to support outreach and engagement regarding the WA Report.

We especially appreciate your outreach throughout this process, including your presentation of this document with the CNMI's Watershed Working Group on March 1, 2022, and your visits with agency representatives and the Mayors' offices when your team visited in early March. OPD also greatly appreciates the 45-day comment period that was provided. During this review period, we also shared updates regarding the WA Report with our Planning and Development Advisory Council (PDAC) and held listening sessions attended by planning partners from Rota, Tinian, Saipan, and the Northern Islands. The comments that follow are a synthesis of these discussions. We hope this feedback is helpful and look forward to answering any follow-up questions you might have and to reviewing the revised document when it is available.

Overall, comments highlighted that the WA Report is well organized and closely follows the framework outlined in the document to generate project recommendations. The planning and evaluation processes were well described and easy to follow. The supporting risk analysis graphics are informative, and facilitate a clear understanding of the significant amount of summarized information provided here.

Some comments also noted areas where clarification or additional information may be helpful.

Specifically:

- The executive summary and report would benefit from additional details regarding actionable recommendations for evaluation and implementation;
- Please expand on the “study authority” and “study purpose” description to detail the area of focus and purpose of this assessment; specifically, it may be worth noting why the geographic scope was limited to the islands of Rota, Tinian, and Saipan. Please address comments received requesting possible inclusion of the Northern Islands and Aguiguan in this or a future report in the document or in a response letter that might detail what conditions would need to be met to include these less populated islands that are nonetheless targets for future development;
- Consider including call-outs or references to lessons learned from recent disasters in terms of impacts to water systems and other built and natural infrastructure on Saipan, Tinian, and Rota including discussion of observed systems impacts, including impacts to solid waste / hazardous waste management challenges that could be addressed through relevant recommendations here – for example, recent typhoons disrupted water supplies on Saipan and Tinian, necessitating emergency water distribution efforts. Additionally, solid and hazardous waste systems were overwhelmed by the influx of debris. These case studies highlight risks and opportunities which are discussed but could be elaborated further in the assessment. Steps that are necessary and sufficient to protect critical lifelines and achieve objectives outlined in the WA Report should be developed in more detail to support the immediate actions that have been recommended;
- In Table 2-4, it is unclear why the OPD Growth Visioning Survey, Comprehensive Economic Development Strategy, Garapan Revitalization Plan, and other plans are included as “local projects” but the Comprehensive Sustainable Development Plan (CSDP) that includes these and other relevant plans and guidance is not listed here although it is included as a resource listed in Appendix F. While also referenced in terms of planning elements in Appendix D, watershed management planning is included as a guiding strategy in the CSDP and many goals, objectives, and action items detailed there would be relevant. Please assess and include relevant goals and guidance from the CSDP in the narrative of the WA Report as applicable in your revision. The CSDP is available at https://opd.gov.mp/assets/2021-2030_cnmi_csdp.pdf. Also consider separating plans and projects in your discussion of local initiatives in Table 2-4 or provide additional narrative describing how these plans are information project priorities;
- Please clearly connect data, analysis, and recommendations to identified water systems and watershed management goals identified in CNMI’s CSDP in this or a supporting stand-alone FAQ or Summary document to support local decision-making and project prioritization initiatives. If feasible, consider developing island- and/or impact-specific recommendations and suggest next steps to address identified data gaps or resource management challenges in existing tables or as sub-sections of the conclusions section further with key take-aways emphasized further in the Executive Summary section;
- When assessing people and structures at risk, consider including planning horizons or timeframes when discussing future conditions and expected change in sea levels at a future date. While this

information was provided in more detail in Appendix B, the WA Report would be enhanced by including that information in the main body of the document. The SLR analysis provided here is similar to the analyses in other recently released reports (e.g., the CNMI Community Development Block Grant Mitigation Action Plan and the CNMI Coastal Resilience Assessment). However, the WA Report uses SLR projections developed by USACE and the other reports use SLR data from NOAA. It would be helpful if this report noted how these data sets differ and how that may affect the different impact analyses. It appears the WA Report did not consider CNMI-specific SLR mapping layers (SLR50_ONDTY) that is applied through the SSG Guidance and scoping tool – if this changes analysis of potential impacts, please detail those differences in the report narrative and expand on this analysis in Appendix B to support assessment of impacts under different scenarios and timeframes;

- Although it is understood that gap identification is not specifically addressed in the six-step USACE watershed planning process, several data gaps were mentioned in the text, however, only two near-term data gaps were discussed in the conclusion section on page 91. As data gaps were identified across resource areas and impact categories, a more robust summary narrative of limitations they may have presented to conducting this analysis to the same level of detail for all islands or impact types in an expanded “gaps and needs for future data collection” section of the report or a note, addendum, or stand-alone close-out report noting those would be helpful to support ongoing discussions of prioritization of future data collection and to reflect the assumptions made and data limitations of this report;
- While the Pacific Islands Regional Climate Assessment (PIRCA) is listed as reference, it is improperly attributed to NOAA, and it does not appear the content of the report was reviewed and incorporated into this assessment. The full report reflects the most current data and is available at <https://www.eastwestcenter.org/system/tdf/private/climate-change-in-cnmi-pirca-2021-low-res.pdf>. Please include discussion of updated observed trends in the climate discussion in section. Please also include reference to and discussion of the 3-meter sea level rise (SLR) planning scenario (SLR50_ONDTY) that CNMI is applying through “Smart, Safe Growth Guidance” (SSG) and scoping tool, and incorporate SSG Guidance recommendations where relevant to help realize planning objective 10 listed on page 20;
- In Section 5.2 discussing risk and disaster rankings, please further define and describe “catastrophic” impacts. Several local partners questioned rankings in Figure 5-1 specific to impact categories related to typhoons. Comments expressed concern that assessment of impacts was not sufficiently contextualized regarding impacts from typhoons, which were categorized as ranging from “Town/Village Impacts” to “Commonwealth-wide”. It was suggested impacts from loss of power and winds so severe that they cause massive destruction across multiple islands and necessitate federal resource mobilization for response and recovery should be considered “catastrophic” due to systems and services interruptions. With typhoons Soudelor and Yutu these impacts included month-long power disruptions that also interrupted water supplies as well as waste management system impacts that we are still working to recover from. While it is noted that the “Risk Assessment Summary” in Figure 5-12 ranks coastal flooding and loss of power as potentially catastrophic, please consider increasing rankings in Figure 5-1 for typhoon impacts which have occurred and, as evidenced by the 2021 PIRCA report, National Climate Assessment,

and more, are likely to continue to increase in frequency and intensity. Please also increase ranking of “loss of power” in terms of severity of impacts to health and safety for Figure 5-3. Loss of power has occurred due to typhoon impacts, with outages lasting for months, and because we have a large number of community members with diabetes that require daily energy intensive treatments, this long-lasting impact resulted in significant strain on families and our medical system, an impact which did in fact occur and is likely to increase;

- Page 41 states that “wildfires occur often from both natural and anthropogenic causes”. Please consider revising or including additional information and analysis as it appears there is very little evidence that wildfires occur from natural sources much less “often”. See Bubb and Williams, 2022. Please also consider including discussion of fire to address spread of / compounding risks of wildfire risk in 5.1.2.3, and discuss impacts to water and food systems and impacts to land cover that might elevate the significance of this impact. Given the connection between economics, food security and availability, and impacts of fires water quality, fisheries, and coral reefs, additional discussion of fire and expanded discussion of food systems may be helpful to explore the interconnections between these stressors and impacts and identify opportunities for management interventions in economic, ecological, and social vulnerability sections;
- Page 59 states that groundwater “over pumping is currently occurring throughout CNMI does not affect life loss. With limited and vulnerable water resources over pumping can lead to reduction in overall water supply and also increased saltwater intrusion. This can lead to permanent impacts on the water supply.” Please cite sources that support the statement that groundwater over pumping is occurring on Saipan, Tinian, and Rota. If this is in fact the case for any or all of the islands covered by this assessment, please reassess risk and impacts further, as water IS life and CNMI has established goals to ensure sustainable, potable, and palatable water on Saipan, Tinian, Rota, and the Northern Islands. If available data supports this statement for only certain areas, please consider refining to reflect those details;
- While septic systems are discussed there is limited discussion and analysis of wastewater systems - a leaking underground (or aboveground) storage tank, landfill, septic system, or sewer system might create significant adverse environmental impacts. These impacts and recommended interventions could be detailed further. Please also address hazardous and solid waste management implications and recommendations in relation to identified risk categories;
- In the risk of loss of life analysis and risk summary section and other relevant portions of the narrative, please include discussion of CNMI’s Comprehensive Sustainable Development Plan (CSDP) goals, objectives, and priorities. This includes a guiding theme to support sustainable systems, and goals and objectives to facilitate watershed management, improve water quality, and manage stormwater such that it seems relevant to include these aims in addition to the reference to the CNMI and Guam Stormwater Management Manual when discussing stormwater and highlight relevant recommendations in Table 6-3, as well as energy and water resource management goals and objectives in this section;
- Consider including additional low impact development / low volume roads recommendations when discussing opportunities for mitigation of rainfall events in Table 6-16, and consider

highlighting ongoing efforts to restore corals and wetlands and reestablish extirpated mangrove species to enhance habitats and ecosystem services; and

- Please include discussion of CNMI's Comprehensive Sustainable Development Plan (CSDP) goals, objectives, and priorities in Table 6-20 when discussing priorities.

Additionally, minor typos were noted in the text where:

- On page 12 of document, please see minor typo in MAT Recovery Advisories summary and on page 14 CEDS summary; please provide citations and links where possible to referenced resources;
- Some of the graphics are a bit small and hard to read – for example, the “planning steps” clip at the start of sections 3, 4, and 5 and the graphic visualizing the ENSO fluctuations on page 21 – please increase the size of figures in final;
- On page 66, please revise the description of “beach nourishment” to omit “pumping” and replace it with “moving” sand which is more general and does not assume sand dredging;
- On page 70, discussing “non-structural measures”, please note that applying SSG Principles and the CSDP are applicable to all “problem categories”;
- When discussing “beach nourishment” on page 85 and elsewhere in the document, please note that if sand is dredged or transported it is important that it is from *appropriate sand sources* and that the sand source meet recommended beach nourishment standards – a fair amount of literature has been developed about this topic so adding some discussion and referenced may be helpful; and
- On page 90, please adjust the “Strategic Economic Development Council” to read the “Governor’s Council of Economic Advisors”.

Regarding the Appendices, please consider the following:

- If meeting notes or materials are available for the meetings referenced on pages 5 and 6 (pages 23 and 24 of the document) it may be beneficial to include those in Appendix A to supplement the materials provided there and offer additional context, detail, and background information;
- Thank you for providing links and hyperlinks where those are available. However, in Appendix B, hyperlinks to numerous references do not appear to be published. Please share the geospatial files developed regarding structures and risk exposure with CNMI to support ongoing planning efforts and confirm the collection date and source of these files and add description of relevant metadata to the structure inventory description in section 1.3.1, and heat maps of flooding exposure included in Sections 3 and 4. Please also include citations to support the statements made regarding healthcare infrastructure in section 1.3.3. Additional information, analysis, and raw data regarding the NSI2.0 model and data outputs would provide better understanding of how

representative this model is for structures in CNMI. Given that building types are rather different in Maui compared to CNMI, discussing model selection and application including differences and calibration of models that was done if any would help provide better understanding of model outputs, implications, and data limitations;

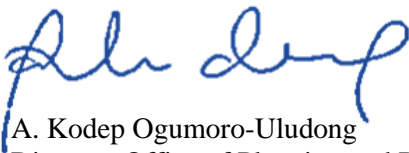
- FEMA MAP reports are referenced in the text of the WA Report – please include analysis and discussion of micro-wind maps created for CNMI as part of that effort in Appendix C, and please provide sources or geospatial data and files used to develop figures to enhance the useability of these products and continued application and analysis;
- In Appendix D, please consider including a section to highlight CNMI’s management goals for lands and waters reflected in the CSDP if discussion of these goals, objectives, and action items is not robustly included in the updated narrative of the WA Report. Please also revise the reference to the CSDP planning elements detailed on pages 11-13 to reflect the 2021 publication date of the CNMI’s CSDP and cross-check table for updates. Discussion of FUDs and Brownfields seems a bit out of place as written on pages 13-14 – consider including additional text relevant to the role of remediation in supporting goals identified in the WA Report. Please consider revising text to summarize and assess rather than duplicate text from other planning documents and reports, or start sections with specific call-outs to ensure proper source attribution. Chloride concentrations are noted in discussion of water supply for Saipan on pages 37-39 – please discuss water supply and available data that was assessed for Tinian and Rota. Please also update the citation for the CSDP in references on page 50 – the link to the published CSDP includes a suggested citation;
- Appendix E includes an image of a latte set in Guam (E-2) – please replace with an image from CNMI or omit. The Historic Preservation Office (HPO) also developed “Sensitive Areas” layers for Tinian and Rota, also available on the BECQ Permitting App. This App, which is used in the SSG Scoping Tool is available here:
<https://dcrm.maps.arcgis.com/apps/webappviewer/index.html?id=8981814f5914421380b9158427853b44> – please include those maps as well. Page E-13 states that unlisted resources will remain unknown until ground disturbing activities expose them, “likely inadvertently”. HPO is a reviewing member of One-Start development permits and requires surveys or monitoring when impacts to cultural resources may be likely to avoid risks of inadvertent finds. Please revise this line to omit “likely inadvertently” or add details noting that impacts may occur despite permitting requirements that aim to protect and preserve these resources. In the next paragraph, it is stated that “[p]re-Latte Period sites documented in the past had relatively small site boundaries and were located along flat elevated coastal areas, in close proximity to coastal lagoons, or on low terraces above beaches” – because some sites have been identified inland, please revise to modify this to reflect “many” documented sites were coastal – and certainly, these sites are facing risks from SLR; and
- In Appendix F, please note the State Standard Mitigation Plan is not an OPD publication – that document can be attributed to the CNMI’s Office of the Governor’s Homeland Security and Emergency Management Program and Hazard Mitigation Grant Program (HSEM). Please verify HSEM 2014 references with HSEM 2018 and update as needed. Please also include updates of Conservation Action Plans which have been transitioned to integrated watershed management plans in Appendix F and in the text as appropriate.

Overall, the Draft WA Report provides a thorough and well-organized approach to assessing and developing recommendations to manage risk and improve resiliency of our built and natural infrastructure. The report aptly outlined uncertainties of climate change and its potential impacts, and reflects tremendous coordination on the part of USACE, our local lead agency at the Bureau of Environmental and Coastal Quality's Division of Coastal Resources Management, and numerous federal, local, and community partners. OPD especially appreciates that the recommendations for actions that were provided resonate strongly with SSG and other planning guidance detailed in the CSDP. We hope this compilation of comments, questions, and suggestions provides constructive feedback as you work to finalize this report. OPD and our planning partners appreciate USACE's ongoing commitment to working closely with your local stakeholders to assess current conditions and chart a path towards more sustainable resource management outcomes.

One gap that continues to be highlighted in this assessment and other planning efforts that we have raised with other federal partners is the need for more current assessment of the costs and benefits of right-sized nature-based solutions to support analysis of effective measures to manage our built and natural infrastructure. More granular analysis of implementation costs is necessary to realistically assess options for ecologically and economically sustainable interventions that will enable us to adapt to changing climate conditions and protect our critical infrastructure. Lacking that, assessment of these options remains somewhat speculative, particularly when costs, assumptions, and models from other jurisdictions are applied due to lack of availability or difficulty in obtaining this data here. To address this challenge, we hope the USACE and other federal partners will continue to work closely with the CNMI's planning and resource management agencies to identify and fund priority implementation projects so we can collect the data we need to inform long-term decision making that aims to protect, preserve, and enhance our critical infrastructure and community lifelines.

We look forward to continuing to collaborate with you to achieve shared goals of improved resource management outcomes for the Commonwealth and the Nation. Thank you for your time, consideration, and ongoing support.

Sincerely,



A. Kodep Ogumoro-Uludong
Director, Office of Planning and Development

CC: Governor Ralph DLG. Torres
DCRM Director Rich Salas



Office of the Mayor

Municipality of Tinian & Aguiguan

Edwin P. Aldan

Mayor

April 15, 2022

MOT-22-052

Kodep Ogumoro-Uludong
Director
Office of Planning & Development
Saipan, MP 96950

REF: Comments on the Draft CNMI Watershed Assessment Plan

Hafa Adai yan Tirow Director Ogumoro-Uludong,

Based on the Draft CNMI Watershed Plan, I noticed that amongst the stakeholders that were listed in attendance of various meetings, the Tinian Mayor's Office wasn't a part of it. This is probably the reason behind Tinian not being listed on pages 42 and 43 under "vulnerable areas" and "structures inundated..." in Tables 4-2 and 4-3.

I am sure that each island in the CNMI has unique characteristics; therefore, each island has specific needs in managing and protecting our water sources, thus requiring specific watershed criteria and elements. Such examples include groundwater supply, water wells (that have been identified by USGIS), and our lone Maui Well (which provides water distribution service to the residents). I would also like to note the current and future developments that are and will be occurring on Tinian soon in relation to the U.S. Military Divert Airfield Activities.

One thing Tinian learned from our Super Typhoon Yutu experience in 2018 is that having mitigation measures and a protective plan in place is important to ensure the well-being of our residents and our livelihood. This is why I am concerned that Tinian does not have an identified watershed management and implementation plan, unlike Saipan and Rota. I would also like to see Tinian included in the emergency preparedness and education & outreach sections of pages 97, 98, 99, and 109. I feel that these are all vital topics that Tinian should be involved in, considering that the Tinian Mayor's Office handles all disaster-relation response and recoveries for the municipality. It is critical that our staff remain engaged, involved, and prepared in these areas.

In addition, Tinian is experiencing infrastructure developments from the private sector and the Department of Defense. Given the magnitude of projects that will take place on our island, it is worrisome to me that the level of security and protection for our groundwater and water shed is not in place. Also, our current pier condition is frightening because during typhoon season, a catastrophic flooding is bound to happen on low-lying areas that threatens our residents and our habitat.

I feel that the 2022 CNMI Watershed Assessment Plan left out essential information that will greatly benefit Tinian regarding its watershed management, criteria, and elements. I am hoping that the data gaps for Tinian will be filled for this plan to be effective for our community. The Office of the Mayor of Tinian and Aguiguan and its staff are ready to participate and ensure that Tinian has an equitable Watershed Management and Implementation Plan - maybe a Pilot Project perhaps.

Si Yu'us Ma'asi yan Olomway,



Edwin P. Aldan
Mayor of Tinian and Aguiguan