NOAA Coastal Management Fellowship
Proposal submission by
US Virgin Islands
Department of Planning and Natural Resources
Coastal Zone Management Program
October 18, 2024

From Planning to Action for Coastal Resilience:
Elevating Environmental Literacy for USVI Priority Resilience Projects

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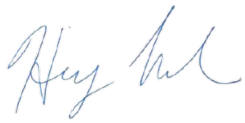

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Background and Introduction

Problem The US Virgin Islands are an unincorporated US territory in the Caribbean, purchased from Denmark in 1917. The islands of St. Croix, St. Thomas, and St. John are small; the ridge-to-reef watershed connection is a visible part of lived experience and critical to effective coastal zone management. According to NOAA, the entire USVI territory - and all its watersheds - is considered to be the coastal zone. However, the USVI has historic and chronic deficiencies in watershed-scale land and water use planning as well as data availability. The small watersheds, steep slopes, and lack of comprehensive planning in development all contribute to growing problems related to stormwater, flooding, erosion, pollution, coastal runoff, groundwater, and drought. These problems are intensified by climate change and social vulnerability. Local agency staff and community members often lack robust environmental literacy (defined as "positive affect, understanding, skills, and environmentally responsible behaviors") regarding coastal processes, steep slopes, and geospatial data, which can hinder the necessary buy-in from resource managers and the community regarding resilience projects.

Need The USVI currently has a historic amount of federal funding and projects to improve climate preparedness, coastal resilience, and quality of life through watershed-scale management, policy, planning, and infrastructure. The Department of Planning and Natural Resources (DPNR) Division of Coastal Management (CZM) works with critical local partners and millions of dollars in federal funding to operationalize Priority Resilience Projects (see below) for transformational change toward a sustainable future and coastal and climate resilience in the US Virgin Islands. To be successful, these diverse projects require buy-in from many levels of the community: decision makers, local agency staff, homeowners, real estate professionals, and design, construction, and maintenance contractors. Improving the environmental literacy of these audiences on the specific topics of coastal processes, steep slopes, and geospatial data will increase their buy-in for the Territory's Priority Resilience Projects listed below. Major partners in these projects include the Department of Public Works (DPW), the VI Territorial Emergency Management Authority (VITEMA), the Office of Disaster Recovery (ODR), the Department of Agriculture (DOA), and the University of the Virgin Islands (UVI).

Priority Resilience Projects are funded by Bipartisan Infrastructure Law (BIL) - Inflation Reduction Act (IRA) and Federal Emergency Management Agency (FEMA) - Hazard Mitigation Grant Program (HMGP), and are listed below:

1. Operationalizing the Comprehensive Land and Water Use Plan
2. Geospatial Decision Support Tool
3. NOAA-Climate Resilience Regional Challenge: Watersheds Pillar
4. Territory Slope Stabilization Study
5. Territory Drainage System Upgrade Study
6. Nature-based Solutions: Underground Storage for Stormwater Management

Value To take full advantage of these funded projects and opportunities, we need help with project and grant management as well as public engagement and outreach. The Coastal Fellow will engage with diverse projects, learning and contributing to multiple stages of project and grant administration,

and coordinating and leading public information and engagement events and efforts. This is an opportunity for the USVI to make the most of the Priority Resilience Projects, to support inter-agency collaborations and public engagement on watersheds and resilience, and to produce new materials and learning experiences for future USVI projects and workforce. Fellowship activities will include creating a roadmap to improve environmental literacy among project partners, multi-media content development about the projects, planning and hosting public meetings, facilitating communication between partners, and updating project partners about public feedback to projects. Milestones include content development such as website and social media content, photos, short videos, presentations and public engagement activities/events specific to USVI coasts, USVI steep slopes, and spatial data management and interpretation.

Background Over the last 18 months the CZM Program has been a leader of the Territory's historic development of a long-awaited Comprehensive Land & Water Use Plan - "Comp Plan." During the development of the Comp Plan, we heard frequently that data availability and data access for agencies and the public left much to be desired. Additionally, stakeholders emphasized the need for protection and wise use of watersheds (protection of natural water and drainage ways) and the need for preservation of coastal areas and habitats. CZM played a lead role in this process and the Program will be utilizing funding available through a NOAA-BIL Capacity Building award to implement the goals and strategies of the Comp Plan related to three of the pillars of the plan, *Making Better Land and Water Use Decisions, Protecting Natural Resources,* and *Planning for a Sustainable Future*. Overall, CZM will improve the Program's services and capabilities for the people and resources of the USVI.

The USVI CZM Program has over $1million in BIL funding to: (a) build out and systematically organize the way data, environmental or otherwise, are collected across the Territory. These data will be standardized across agencies as reasonably as possible, curated, and made accessible to provide both the community and regulatory agencies with information for better decision-making; (b) collect information and provide standards and education for development taking place in watersheds especially on steep slopes and around waterways; and (c) collect information and provide standards and education for development taking place in coastal areas across the Territory.

Furthermore, agency partners at DPW are working on several major watershed improvement projects under hazard mitigation. During intense rainfall events including hurricanes and storms, rain-induced landslides result in blocked roads and drainage infrastructure, increased sedimentation in stormwater, and in some instances, endangering the foundation of infrastructure like roads and buildings. Future precipitation patterns are expected to increase the risk of landslides across the US Virgin Islands according to the recent Hazard Mitigation and Resilience Plan. To mitigate the risk of landslides and the resulting damage and impacts, DPW has a FEMA project to identify locations for slope stabilization studies and designs in areas identified to be at risk of landslides. Also, DPW has a FEMA project for culvert assessments and upgrades to accommodate improved stormwater and drainage capacity.

The Coastal Fellow will support CZM and its close partners to implement these historic watershed Priority Projects and to seize the opportunity to improve environmental literacy about USVI coasts,

slopes, and spatial data. The Fellow will add capacity and value to several Priority Resilience Projects, enhancing the quality of partner coordination and public engagement.

Goals and Objectives

The goals and objectives of the Coastal Fellowship are designed to support the host agency. CZM works with diverse types of partners and members of the community to implement watershed and coastal protection and restoration programs and projects to increase USVI resilience to climate change. This includes engaging with many types of Decision-Making Communities (DMC) whose land use decisions affect watershed management, coastal and climate resilience. Examples include (1) resource agencies like DPNR, Agriculture (DOA); (2) infrastructure agencies like Public Works (DPW), Water and Power (WAPA); 3) homeowners, renters, 4) design, construction, and maintenance contractors, and 5) real estate that all engage with the earth change permit process at DPNR.

GOAL 1: Increase quality and quantity of USVI environmental literacy resources and knowledge regarding USVI coastal processes, steep slopes, and geospatial data for staff and members of diverse Decision-Making Communities (DMC): 1) resource management agencies, 2) infrastructure agencies, 3) homeowners, 4) design, construction, and maintenance contractors, and 5) real estate so that the Priority Resilience Projects are successfully implemented.

OBJECTIVE 1.1: Within the first quarter, produce an environmental literacy capacity-building roadmap (i.e., work plan) of USVI coasts, steep, slopes, and geospatial data based on existing environmental literacy of the DMC and the goals of Priority Resilience Projects.

ACTIVITY 1.1.1: Conduct a kickoff meeting with DMC including the project goals, expectations, timeline.

ACTIVITY 1.1.2: Conduct baseline surveys of the DMC to assess their literacy of USVI science, policy, and available resources regarding coasts, slopes, geospatial data.

ACTIVITY 1.1.3: Create the environmental literacy capacity-building roadmap of USVI coasts, steep, slopes, and geospatial data.

OBJECTIVE 1.2: Within 2 years, implement at least 50% of the environmental literacy capacity-building roadmap.

ACTIVITY 1.2.1: Conduct workshops with the DMC to increase environmental literacy of USVI science, policy, and available resources regarding coasts, slopes, geospatial data.

ACTIVITY 1.2.2: Develop multi-media content for the DMC to include USVI science, policy, and available resources regarding coasts, slopes, geospatial data (e.g., infographics, short videos, etc.).

ACTIVITY 1.2.3: Provide at least 2 public presentations of the multi-media content for the DMC to include USVI science, policy, and available resources regarding coasts, slopes, geospatial data (e.g., infographics, short videos, etc.).

OBJECTIVE 1.3: In the last quarter of the Fellowship, create an updated environmental literacy capacity-building roadmap.

ACTIVITY 1.3.1: Conduct close-out surveys of the DMC assessing their environmental literacy of USVI science, policy, and available resources regarding coasts, slopes, and geospatial data.

ACTIVITY 1.3.2: Update previous components of environmental literacy capacity-building roadmap and add new ones as needed based on the assessments in the above activity.

GOAL 2: Foster and strengthen collaborations among Priority Resilience Project partners.

OBJECTIVE 2.1: Maintain communication with 100% of Priority Resilience Project partners 4 times a year for 2 years.

ACTIVITY 2.1.1: Facilitate quarterly check-in meetings with Priority Resilience Project partners at DPNR, DPW, and the University of the VI.

Milestones and Outcomes

Qtr	Milestone	Deliverable
1	Onboard to CZM	Fellowship Work Plan, including a portfolio of USVI Priority Projects
	Complete Activity 1.1.1	Kickoff meeting event report including materials, network/contact list, outcomes
	Complete Activity 1.1.2	Analyzed DMC baseline surveys on environmental literacy
	Complete Activity 1.1.3	Environmental Literacy Capacity-Building Roadmap.
	Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management
2	Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management
3	Activity 1.2.1	Conduct workshops with DMC: knowledge of USVI science, policy, and available resources regarding coasts
	Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management
4	Activity 1.2.1	Conduct workshops with DMC: knowledge of USVI science, policy, and available resources regarding slopes
	Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management
5	Complete Activity 1.2.1	Conduct workshops with DMC: knowledge of USVI science, policy, and available resources regarding geospatial data
	Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management

6	Complete Activity 1.2.2	Develop multi-media content for DMC: USVI science, policy, and available resources on coasts, slopes, geospatial data (infographics, short videos, etc.)
	Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management
7	Complete Activity 1.2.3	Provide public presentations using developed multi-media products.
	Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management
8	Complete Activity 1.3.1	Develop, conduct, analyze closeout DMC survey on environmental literacy
	Complete Activity 1.3.2	Updated Environmental Literacy Capacity-Building Roadmap, including Recommendations and Next Steps.
	Complete Activity 2.1.1	Priority Resilience Projects quarterly project facilitation/management
	Fellowship Closeout	Closeout Report of accomplishments and lessons learnt

Outcomes

The USVI has better resources, improved knowledge, and better collaboration for watershed, climate, and coastal resilience. Priority Resilience Projects are successfully implemented and USVI's watersheds are better managed to reduce flooding, erosion, runoff, pollution, and improve quality of life and resources. This results from:

1. Increased USVI environmental literacy resources and knowledge regarding USVI coastal processes, steep slopes, and geospatial data for staff and members of diverse Decision-Making Communities; and,
2. Strengthened collaborations among USVI Priority Resilience Project partners.

Project Description

The USVI NOAA Coastal Management Fellowship is designed to support the host agency, the Department of Planning and Natural Resources (DPNR) - Division of Coastal Management (CZM). The Coastal Fellow will engage with diverse projects, leading internal and external information and engagement efforts and coordinating collaboration between key partners. This includes engaging with many types of Decision-Making Communities (DMC) whose land use decisions affect watershed management, coastal and climate resilience. Examples include (1) resource agencies like DPNR, Agriculture (DOA); (2) infrastructure agencies like Public Works (DPW), Water and Power (WAPA); 3) homeowners, 4) design, construction, and maintenance contractors, and 5) real estate that all engage with the earth change permit process at DPNR.

The Fellow will work to improve the environmental literacy of the DMCs so that informed participation for several active projects can be fortified. These Priority Resilience Projects will lead to improved stormwater mitigation and watershed management and include projects for developing policy around slopes and shorelines, producing geospatial tools, and implementing nature-based solutions (NBS) such as slope stabilization, stormwater retention, drainage improvements to swales and culverts, etc.

The first goal is to increase USVI environmental literacy, resources and knowledge regarding USVI coastal processes, steep slopes, and geospatial data for members of diverse Decision-Making Communities (DMC) so that the Priority Resilience Projects are successfully implemented. The DMCs include: 1) resource management agencies, 2) infrastructure agencies, 3) homeowners, renters, 4) design, construction, and maintenance contractors, and 5) real estate professionals. The Fellow will produce an environmental literacy capacity-building roadmap (i.e., work plan) of USVI coasts, steep slopes, and geospatial data based on existing environmental literacy of DMC and the goals of Priority Resilience Projects. To accomplish this, the Fellow will conduct a kickoff meeting with DMC on the project goals, expectations, and timeline. They will conduct baseline surveys of the DMC to assess their literacy of USVI science, policy, and available resources on coasts, slopes, and geospatial data.

The Fellow will then work with their mentor to prioritize activities in the developed roadmap for the Fellow to complete before the end of the fellowship. Activities will include conducting workshops with the DMC on the three themes (coasts, steep slopes, and spatial data management and tools) and developing multi-media content for the DMC to include USVI science, policy, and available resources regarding coasts, slopes, geospatial data (e.g., infographics, short videos, etc.). The Fellow will provide at least 2 public presentations of the developed multi-media content for the DMC. Materials for the workshops and multi-media products include new and existing resources like the 2022 VI Environmental Protection Handbook, Unpaved Road Standards for Small Islands, Comp Plan, Coastal Vulnerability Index, NOAA Digital Coast, USVI Coral Prioritization Tool, and developed local case studies that highlight Priority Projects.

The fellowship will wrap up with the creation of an updated environmental literacy capacity-building roadmap. To accomplish this, the Fellow will conduct close-out surveys of the DMC's environmental literacy and then update previous components of environmental literacy capacity-building roadmap and add new ones as needed.

The second goal of the fellowship is to foster and strengthen collaborations among USVI Priority Resilience Project partners. The Fellow will maintain relationships with the Priority Resilience Project throughout the two years by facilitating quarterly check-in meetings with the partners at DPNR, DPW, and the University of the VI.

Diversity, Equity, Inclusion, and Justice

The US Virgin Islands (USVI) consist of the main islands of St. Croix, St. Thomas, and St. John and 50 surrounding minor islands and cays. The total land area of the USVI is 133.73 square miles. Nearly 600 square miles of territorial waters extend from land to 3 nautical miles offshore.

The USVI is 78% black, 15% white, 14% other. The Fellowship scope affects all islands and waters, therefore the benefits of capacity building and climate resilience will include the local underserved communities on all islands. Specific examples include projects in areas identified as Highly Socially Vulnerable in the Social Vulnerability Index (SVI) like Bovoni and Smith Bay, St. Thomas and Mon Bijou, Lorraine, and Frederiksted, St. Croix. The USVI is an underserved, disadvantaged, and

underrepresented community. More than 22% of the population and 30% of children live in poverty (US Census 2020) and over 24,000 people live in communities considered disadvantaged (Council on Environmental Quality). The USVI suffers from low educational achievement, with nearly 60% of students testing below standard for literacy and mathematics; UVI graduation rate 28% (U.S. average is 63%). The USVI lacks access to affordable fresh and healthy food; roughly 97% of food in the USVI is imported, and 35% receive social security income (U.S. average is 20%) & 18% food stamps (U.S. average is 12%). From the 2020 Census, we learn that 25% of the population does not have health insurance, which is well above the U.S. average of 8.4%. Virgin Islanders do not vote for president nor have voting representation in Congress. The Gini coefficient is 50%, which is a sign of inequality comparable to Angola, Belize, and the Republic of Congo, among others.

In small and resource-deficient communities, access to information for decision making is often hard to find, difficult to interpret and in this way contributes to questionable decision making. These conditions have exacerbated longstanding challenges within the community, driving fragmentation and inequity amongst groups and individuals. This Fellowship will provide a way for the community at all levels, but especially the most socially vulnerable, to better access and interpret the data and information necessary to contribute to better decision making about watersheds, from slopes to coasts, use in the USVI. Specifically, the Fellow will design the workshops and outreach materials to inclusively target individuals who live and work in Priority Project areas that are Highly Socially Vulnerable (examples listed above) through collaboration with project partners like UVI, Crucian Heritage and Nature Tourism (CHANT), and others. The Fellow will engage with diverse members of the community, from traditional knowledge to technical experts and community leaders.

Fellow Mentoring

The USVI Coastal Management Fellow will join a dynamic and diverse team at CZM in St Croix. The Fellow will be mentored by the CZM Program Director Marlon Hibbert, Coastal Resilience Coordinator Hilary Lohmann, and Federal Grants Coordinator (being hired Nov 2024). Director Hibbert and Hilary have been with CZM since 2019 and mentored a NOAA Coastal Management Fellow in 2020-2022. Hilary was a NOAA Coral Management Fellow in St Croix, USVI 2016-2018. The Grants Coordinator will be hired in November and will also have a large role in the Priority Resilience Projects and the Fellowship mentorship. This includes guidance and support regarding project planning, progress reports and adaptive management, community engagement, etc.

Other mentorship support will be provided by Sabrina Woofter, DPNR's Nonpoint Source Pollution Program Administrator and previous NOAA Coral Management Fellow as well as Coral Reef Initiative Coordinator in American Samoa and supervisor of several NOAA Coral Management Fellows. Piotr Gajewski is the Design Manager for the Department of Public Works, Dr. Gregory Guannel is the Director of the UVI Caribbean Green Technology Center, and Leslie Henderson is the NOAA Liaison for Coastal and Coral Programs. These parties will also provide project advice and guidance. All parties have been collaborating on watershed management and resilience for many years and many projects, which will provide an exciting and educational work environment for the Fellow.

Office Environment

The Coastal Fellow will be hosted at the DPNR-CZM office in Frederiksted, St. Croix. The Fellow will be provided with a laptop computer, workspace with internet, A/C, desktop, and break room. Furthermore, the Fellow will be invited to work certain days at the DPW to enhance collaboration and learning exchanges with project partners. The Fellow will discuss the extent of telework with their mentor during the first quarter to determine the best balance.

Project Partners

The Priority Project partners at DPNR and DPW along with others at UVI, DOA, VITEMA work together closely on existing and upcoming projects related to climate resilience, stormwater and watershed management, and capacity building. In this way, this Fellowship is designed to align with and leverage the ongoing major projects and therefore contribute to meaningful, transformational change for the Territory. The Fellow will coordinate with mentors and partners to collaborate with community partners including the VI Trail Alliance (VITAL), Crucian Heritage and Nature Tourism, (CHANT), and others on dynamic resilience projects related to land acquisition, workforce development, walkability, and the recreational parks system.

Cost-Share Description

The USVI CZM program will provide the required match of $15,000 utilizing local funding sources and will also provide travel support outside of the NOAA allocation for professional development as needed.

Strategic Focus Area

Improved watershed management is incredibly impactful for small islands to manage their climate resilience in the face of hazardous events and conditions and degrading tropical coastal habitats. Solidifying the buy-in through environmental literacy, and therefore, the bolstering success, of the Priority Resilience Projects will help ensure a healthy coastal ecosystem, resilient coastal communities, and a vibrant and sustainable coastal economy.

The Projects will help manage stormwater runoff, reducing its quantity and pollutant loads reaching the nearshore habitats and improving the health of our coastal ecosystems. They will also improve resilience of coastal communities to endure floods, storms and droughts by reducing their direct impacts through improved watershed management and allowing communities to bounce back quicker from severe weather. Successful Priority Resilience Projects also act as investment and insurance in the tourism-based coastal economy of the USVI. This economy relies on enjoyable, aesthetically pleasing, safe, and vibrant terrestrial and marine ecosystems, all of which require significant watershed management with support and participation from resource managers and the community.