Appendix G

Implementation Plan

July 31, 2016

Purpose

The purpose of this document is to identify federal and territorial grant or funding programs that may provide fiscal support for implementing activities designed to reduce pollutant loads to the US Virgin Islands (USVI) waters. This report supplements five total maximum daily load (TMDL) documents that were prepared for key watersheds within the USVI, and provides broader context of individual funding programs and key implementation activities that can be conducted at multiple scales. The five priority watersheds include:

- St. Thomas East End Reserve (STEER)
- Coral Bay (STJ)
- Fish Bay (STJ)
- Salt River (STX)
- East End Marine Park (STX)

This document outlines the following objectives:

- Identification of key activities to reduce pollutant loads within the territory and key watersheds,
- Identification of key funding programs from federal or territorial sources,
- Linkages between identified activities and potential funding sources
- Recommended next steps

Methods

An assessment of potential implementation measures was conducted via interviews and site visits between October 2015 and May 2016 with a range of stakeholders operating in different capacities on all three islands. Some of the stakeholders had interest in only single watershed areas; others operated at the island and territory scales. These stakeholders were represented by the following organizations or groups:

- Department of Planning & Natural Resources (DPNR)
- DPNR Coastal Zone Management (CZM)
- Department of Environmental Protection (DEP)
- USDA Natural Resource Conservation Service (NRCS)
- National Park Service (NPS)
- University of Virgin Islands (UVI) researchers and community outreach staff
- Community groups, NGOs focused on environmental concerns
- Professionals within the construction sector (architects, builders, trade craftsmen)
- Hotel and Restaurant industry members
- Community members, residents and small businesses
- Community members associated with live aboard vessels

Approximately 60 interviews were conducted as part of the survey. As part of the interviews, participants were asked about activities affecting water quality, their past work or personal history associated with observing pollutants during rainfall events (primarily leaking septic tanks and erosion-derived sediment), and official duties and responsibilities as they pertain to water quality (e.g.

inspections, implementing BMPs, etc.). Participants were also asked to provide recommendations that could be used in developing implementation options to improve water quality. Responses were kept anonymous to encourage unencumbered feedback.

Site conditions and potential implementation opportunities were surveyed during two field tours. Environmental conditions and general watershed health was assessed through rapid surveys of road conditions, drainage networks, reviews of past projects (e.g. rain gardens, culvert enhancements, etc.), active construction sites, live aboard vessels, centralized wastewater treatment facilities, vegetation cover and land-use activities, and other features or potential sources of pollutants. The overall conditions were qualitatively assessed and a range of activities were identified that would potentially reduce pollutant loads to waters.

Programs were identified that could potentially align with implementing a range of activities identified. A short description of these programs is provided and are directly connected with activities to serve as a tool to develop feasibility options to secure funding for future implementation.

Identified Water Quality Enhancement Activities

This section summarizes is a summary of the potential activities identified through stakeholder interviews and site visits that could be implemented to improve water quality. Activities are grouped into broad categories that may have direct influence on water quality via on-the-ground activities (e.g. road paving); many actions recommended would improve the overall effectiveness and efficiencies associated with reducing pollutants throughout the territory. In addition to territory-wide actions, activities associated with each key watershed are also specifically mentioned.

The most ubiquitous impairment identified by the 303(d) list was associated with turbidity. The NOAA *Final 312 Evaluation Findings of the Virgin Islands Coastal Zone Management Program* reiterated concerns about development and earth change in Tier 2 in which erosion and sedimentation is *"one of the major impacts to coastal water quality and to the long term health of the Territory's coral reefs*". As such, many of the enhancement activities presented here are related to abatement of land-derived sediment sources.

Territory-Wide Recommendations

This section outlines activities identified that have relevance to the entire territory and would potentially be of benefit to the key watersheds of this study. It is important to note that these recommendations represent those observed in the short timeframe of this study.

1. **Increase on-the-ground inspections and controls of construction and earth change work; ensure proper BMP implementation.** Inadequate (or absent) erosion and sediment control practices were observed throughout areas with active construction projects, including house construction and other earth change work. Unpermitted work was observed on many occasions. Improvement in BMP enforcement, particularly in the proper installation and maintenance of silt fencing, would reduce sediment loading. This requires frequent patrol of all target areas to identify where work is being conducted (with or without a permit) and an on-site presence of

CZM personnel. Gaps in personnel has led to a lack of presence by enforcement staff (in some areas), which has effectively allowed for lower standards by inexperienced contractors and the public, with few observances to existing BMPs. In areas where training and staffing was adequate, there was a marked difference in the quality of the BMP applications, and having the clear presence of enforcement staff appeared to have greatly improved the compliance. A program to increase staffing and training, coupled with active patrols (2-3 times per week) could have a territory-wide effect on BMP compliance.

2. **Increase fines or create incentives for repeat violators for permitting process.** Stakeholders noted there has not been an incentive to implement BMPs, especially when fines are low or when enforcement is not adequate. This creates a system that penalizes good behavior (through cost of implementing BMPs) and rewards poor behavior (for low fines or not enforced).

3. **Increase reliability of water quality sample data.** Water quality sampling training for CZM, DPNR, NPS, and NGO staff handling water quality samples or managing a water quality monitoring program, in collaboration with University of the Virgin Islands, would provide more robust results to better capture the current water quality conditions. Some data collected have yielded questionable results that could be attributed to uncalibrated field equipment, contamination of samples, faulty field equipment, etc.

4. **Institutionalize a certified water quality laboratory or support system/ network** to facilitate and standardize the handling and processing of water quality samples for USVI. Having laboratories on all three islands would facilitate more intensive time-series sampling to provide a better baseline.

5. **Provide an intensive wastewater engineering training** for construction trade, homeowners, developers, CZM, and engineers to properly identify the size, type, and design criteria for wastewater treatment systems. Improving the capacity of the territory officials and the trade to better select systems would create a long-term reduction in bacterial contamination.

6. **Provide a consultation workshop for wetland identification** for CZM, architects, real estate agents, NPS, and NGOs to better understand wetland features and where not to build. Building capacity within these groups will help to limit the encroachment into wetlands, and also maintain the functions of wetlands in the system to trap pollutants before interaction with the reefs.

7. **Improve integration with research and management.** Integration between University-based research science and agency-based management would improve the dual understanding of the threats to water quality within USVI and to develop more effective means to implement improvements. Testing the efficacy of BMPs as well as testing improvements through collaborative means would build the knowledge base capacity within the territory, as well as finding creative solutions that are unique to the USVI.

8. **Increase opportunities for "citizen science",** especially among the youth to establish and reinforce relationships between land-use practices and watershed- and marine health.

9. **Increase personnel capacity for permit applications.** Increasing the level of scrutiny of review for all development projects within the territory (such as Tier 1 locations) for potential natural hazards and implementation of BMPs will likely result in reductions in pollutant loading. This would require additional staff and training within CZM and a focused effort to review current policies and staffing needs.

10. **A regular wastewater maintenance plan** that provides for the routine inspection, maintenance and repair of structures and the removal of debris and accumulated sediment will have a large impact upon the effectiveness of any installed system. Staffing, training and a funded program within Public Works could slowly improve the wastewater conditions and identify priorities for replacement/ repair.

11. **Inspection, maintenance and repair of stormwater control structures** requires staffing and a routine patrol to ensure structures are functioning properly. On private lands, it is important to identify the maintenance responsibility with enforcement or incentives to improve effectiveness.

12. **Private road maintenance and repair.** Funds are not routinely available for general maintenance of private roads. Road degradation occurs during small and large storm events and can be cost prohibitive to maintain and repair damage.

13. **Improve road grading/ implement standards.** For all roads in the territory, all heavy equipment operators should be trained and certified in appropriate grading techniques prior to the start of any road construction. Enforcement of such a certification program would reduce short- and long-term erosion and sediment delivery that occurs from improper grading.

14. **Enforce the 25 feet from the edge buffer** from the center of guts for construction; this is widely ignored and guts are primary conduits (in addition to roads) as stormwater and wastewater runoff. Improved and routine patrols and enforcement requires additional staffing and training.

Fish Bay (St. John) Recommendations

A 2001 watershed management plan was prepared for Fish Bay by the Department of Planning and Natural Resources, and many of the recommendations in that plan are still applicable or have yet to be instituted today. The following represent key findings from the 2001 plan and results from field surveys in 2016.

1. **Erosion control measures** on private and public roads, cutslopes, construction sites etc. are strongly recommended. Specifically,
    a. Pave the last section of Marina Drive in Fish Bay (eastern most section).

b. All cutslopes greater than 50% slope or > 3 feet in height should be reduced and stabilized through one of the best management practices methods (terraces, retaining walls, gabion baskets).
c. Erosion from private, steep individual driveways and smaller unpaved access roads in the upper portions of Fish Bay should be controlled through paving, stabilization, or divert water to raingarden/ bioswale features.
d. Much of the lower watershed implementation priorities have been addressed, and focus should be on newer eastern section, the upper reaches of the watershed and new developments and access roads.

2. **Protect the mangroves along the northeastern section of the bay.** Several lots characterized as mangrove forest are currently "for sale" in this area, and loss of this habitat would further reduce water quality and resilience from climate change impacts.
    a. Options include acquiring the wetlands, the development rights to the wetlands, or converting the wetlands to a protected area or combine all protected areas into a marine reserve.
    b. Wetland parcels require delineation to identify areas that are not legal for development.
    c. Install culverts and drainage and flow system between mangrove (which is being cut off) and Fish Bay.

3. **Prepare and execute a regular maintenance plan** that provides for the routine inspection, maintenance and repair of structures, including the removal of debris and accumulated sediment, which will have a large impact upon the effectiveness of any installed system.

4. **Identify responsibility to maintaining stormwater control structures.** For private paved roads, identify clear responsibility to maintain structures to avoid degradation. Collaboration with territorial government or incentive programs for landowners.

5. **Potential pollutant sources in the upper reaches** of the watershed (Centerline and Gift Hill roads) should be reduced, particularly at commercial properties. Additional on-the-ground outreach to identify potential BMPs or solutions for stormwater runoff will be required.

6. **Address the Susannaberg Landfill source,** which was closed in 1990's, but still operates as a transfer station, and solid waste continues to enter into Fish Bay Gut.

7. **Incentivize septic system upgrades.** Inspection and repair of old failing and overstressed septic systems to those designed for the number of occupants with a modern system. Will require external funds and expertise to better design and install these features.

Coral Bay (St. John) Recommendations

1. **Erosion control measures** on private and public roads, cutslopes, construction sites etc. are strongly recommended. Specifically,

a. Use Coral Bay Community Council priority projects list to identify road erosion control priorities including (Bordeaux Road, King's Hill, Calabash Boom, Centerline Road, Upper Carolina subdivision, John's Folly, and associated road networks).
b. All cutslopes greater than 50% slope or > 3 feet in height should be reduced and stabilized through one of the best management practices methods (terraces, retaining walls, gabion baskets).
c. Erosion from private, steep individual driveways and smaller unpaved access roads should be controlled through paving, stabilization or raingarden/ bioswale development.

2. **Provide on-site technical assistance** to residents, businesses, developers and others to implement best management practices for non-point source pollutant control.

3. **Support Coral Bay Community Council** to address non-point source priority problem areas. Current administrative barriers, fiscal management challenges and obstacles for small non-profits to be able to receive and administer grants are overwhelming and support from territory and federal grant programs will greatly increase effectiveness and capacity for such organizations to expand efforts.

4. **Streamline and increase capacity in the permitting, plan review, site inspection and enforcement process for St. John.** St. John CZM is very understaffed and not able to inspect or patrol on a timely and regular basis. Increasing staff and training to increase capacity to respond with wetland and wastewater concerns as well as enforce BMPs for stormwater is a critical gap. Construction trade is requesting additional support for inspections as overall trade quality is declining with contractors that do not follow BMPs or acquire permits (incentivizing poor behavior by less reputable construction workers).

5. **Stormwater and wastewater improvements at commercial waterfront properties along the waterfront of Route 107 and East End Road.** Wastewater is discharged during rainfall events from places such as Skinny's, Aqua Bistro, Shipwreck, Oasis and the marina area in front of the harbor. These locations also cater to the live aboard community and as such wastewater treatment is likely overloaded, near the bay, and are probably the major source of contamination from the liveaboard community (land based, not vessel based).

6. **Improvements (road, culvert, stormwater drainage, sewage) and access to a mobile pump out facility for the liveaboard yachting community** in Coral Bay (fees could be used to support the amenities offered) would reduce storm and wastewater inputs. A feasibility should be consducted to determine how many vessels have holding tanks, versus how many live aboard community use facilities on land (e.g. local restaurants). Couple this action with #5 above, improvements to waterfront facilities.

7. **Enhance riparian conditions of the primary guts** (e.g. Kings Hill demonstration projects) with vegetation, soil protection and stabilization methods.

8. **Protect critical areas (mangroves, salt ponds)** that provide natural hydrologic function and stormwater storage in Coral Bay (Areas of Particular Concern)

9. **Support and incentivize the post-construction demonstration projects that use best management practices** for storm and waste water management, engaging contractors, realtors, local residents, CZM and NGOs. Set standards for quality and consider a certified contractor program emphasizing best practices are followed.

10. **Modify the zoning system in Coral Bay watershed so that CZM can inspect in Tier 2 areas.** Many of the sources of stormwater flow generates above 200 ft in elevation and outside CZM inspection areas (<200 ft).

11. **All cutslopes greater than 50% slope** or > 3 feet in height should be reduced and stabilized through one of the best management practices methods (terraces, retaining walls, gabion baskets).

12. **Control erosion from private, steep individual driveways and smaller unpaved access roads** in the upper portions of Coral Bay, extending to Bordeaux and Upper Carolina and Ajax Peak. Private road systems should be inspected and maintained, with incentives for improvements.

13. **Conduct inspection, maintenance, and upgrades for septic systems,** as many of the houses in the watershed were built for single family use, and properties have now been subdivided with multiple units and residences and are overloaded.

St. Thomas East End Reserve (STEER) Recommendations

1. **Pollutant sources in the vicinity of St. Thomas East End are primarily driven by high density residential and commercial urban activities within a large portion of the watershed.** Identifying the major polluters would be a first priority and include Tutu Park Mall, Four Winds Plaza, port Mylner Plaza, Home Depot, Price Smart, and Cost-U-Less. The majority of these areas are impervious surfaces with runoff directed into the guts.
    a. Gut cleanup and protection (stabilization, vegetation) should be prioritized.
    b. Turpentine Run and Nadir Guts are the primary guts that should be prioritized to protect water quality in St. Thomas East End. Currently there is trash, sediment, wastewater runoff, and active erosion in these guts.

2. **Address residential sewage discharge problems** with the wastewater facilities (improve wastewater management) and enforce policy of shift from failing septic systems to more modern wastewater treatment.

3. **Protect the mangroves, salt ponds and freshwater wetlands of STEER watershed** using the 2010 Wetlands Inventory of the USVI including Benner Bay Lagoon, and Tutu Park Marsh. Subwatershed priorities include Hernhut Pond, Patricia Cay, Compass Pt Salt Pond, Cabrita Salt Pond, and Turpentine Pond.

4. **The Bovoni Landfill discharges contaminated leachate into the adjacent wetlands;** control of discharge and protection of the remaining wetlands for STEER is a priority.
    a. Control solid waste and runoff from Bovoni Landfill in to Mangrove Lagoon. Currently, the mangrove lagoon is acting as a buffer and likely sink for contaminants from landfill from entering the coastal waters.
    b. Cutting, filling in or damage to the Mangrove lagoon could result in the release of heavy metals and contaminants from the sediment.

5. **Provide incentives for waterfront businesses to install, replace and maintain failing wastewater treatment systems** (small package plants, commercial properties, housing projects).

6. **There are many opportunities to retrofit existing or install new facilities** on developed properties to improve stormwater management
    a. Consultation with DPW who have a list of priority projects, many of which coincide with hazardous areas susceptible to natural disaster and sea level rise and increased storm incidence.
    b. Schools, commercial properties, housing developments including public projects are past-due for retrofit for stormwater control.

7. **Improve territorial wastewater treatment** and address overflow problems associated with rainfall events at public facilities.

Salt River Priorities Recommendations (St. Croix)

1. **Protection of Salt River Canyon Gut** from upland stormwater and waste water runoff from urban development and housing projects. See territorial recommendations for stormwater runoff and wastewater treatment facilities.

2. Protect shoreline mangrove lagoon and salt ponds.

3. **Incentivize improvements of marina and waterfront area in Salt River Lagoon** where commercial boat building and ocean recreation businesses operate. Surface roads accessing the marina and just above on public road are sources of runoff. Inspect wastewater system in local businesses, located very close to the lagoon.

4. **Enforce permitting and earth change for new construction** and development including in Judith's Fancy to eat of Salt River Lagoon.

5. **Conduct full-scale watershed assessment for Salt River.** Linkages between the large-scale flood control project near Mon Bijou and Libannon Hill areas and the hydrology of Salt River Bay needs to be better understood. In addition, there is a high rate of change in the land-based resources of the area with no clear assessment of hydrology, sediment, and vegetation in the area.

St. Croix East End Marine Park Recommendations

1. **A fairly low-density urban and residential community resides on the East End of St. Croix,** therefore the implementation strategy would be to prioritize a few key problem sources locations for stormwater and wastewater pollution. In each subwatershed a few strategic problem areas can be identified, and best management practices for addressing each typically already exists. There is a high level of engagement with on-site inspection and patrol in the area by personnel shared by the Park and CZM.
    a. Erosion control measures on private and public roads, cutslopes, construction sites etc. are strongly recommended for a few key roads in each subwatershed.
        i. Pave South Gate marina road
        ii. Enforce or incentivize stormwater best management practices for South Gate marinas
        iii. Pave the last mile of Grapetree Bay road to Turner Hole. Pave gravel steep roads in the Tuner Bay watershed.

2. **Enforce holding tank dumping regulations in South Gate marina.** Incentive use of holding tank pumpout facilities or fund a mobile holding tank disposal system.

3. **Support St. Croix Environmental Association projects in Southgate Gut.** Restoring connectivity with the Southgate pond to mitigate flooding and other priorities addressing non-point source pollution.

4. **Enforce, incentivize and improve wastewater treatment facilities.** Some are currently using Gut system as cesspools; others are functioning well. Incentivize and assist with engineering and fiscal resources to ensure treatment facilities are up to par and are being properly maintained.

5. **Pave roads above Teague Bay** and install culverts, erosion control BMPs, etc. for earth change areas near Teague Bay.

6. **Retrofit or make improvements to wastewater treatment facilities** and incentive switch to better systems for failing overstressed septic systems. Conduct assessments of the following:
    a. Divi Casino Bay Resort
    b. St Croix Yacht Club marina complex area
    c. Target failing overburdened septic systems for retrofit in private homes
    d. Teague Bay commercial and residential properties
    e. Reef Golf Condos
    f. Chenay Beach Resort

7. **Incentivize or support paving of "last mile" on all road networks (private and public).** The major issue associated with sediment delivery from stormwater stems from unpaved sections of roads. In one case near the Divi Casino, erosion-derived sediment originates from ~0.25 mi of unpaved road, which immediately continues downslope to private properties and enters the

bay. Incentives to divert stormwater (rain gardens) and pave small sections of roads on private lands will make a major reduction in sediment delivery to waterbodies. CZM has identified ALL of these areas and can directly assist in prioritizing and deploying resources to "shovel ready" projects.

8. **Support community-driven projects.** There is currently a NOAA Coral Management Fellow in place and has been working with community members on watershed enhancement. CZM/Park personnel has been very active in monitoring problem areas. With this capacity in place, along with the community response to better understanding non-point source pollution issues, the area is ideal for designing and implementing projects to reduce non-point source pollution.

Territorial & Federal Programs

There are a number of fairly predictable sources of funding for the US Virgin Islands for water quality improvement across the territory. The majority are from the federal US government sources. This section lists many major programs that are available, along with their priorities and goals for funding.

Specific implementation actions are keyed to these programs in subsequent sections.

Available Programs for Supporting Implementation Actions

Office for Coastal Management Grants and Cooperative Agreements: Each year, NOAA works with states and territories encourage research, education and outreach, innovative projects, or sponsorships that are not addressed through the competitive discretionary programs. Current priorities are 1) climate adaptation and mitigation, 2) weather ready nation, 3) healthy oceans, 4) resilient coastal communities and economies. Eligible applicants may be institutions of higher education, nonprofits, commercial organizations, international or foreign organizations or governments, individuals, state, local and Indian Tribal governments. Proposals can be submitted until September 2017.

NOAA Coastal Zone Management Projects of Special Merit Competition: Each year approximately $50,000-$200,000 per proposal is awarded to projects that focus on (1) preventing or reducing threats to life and property or (2) planning for ocean uses. This include funds from Section 309 that encourage territories with approved coastal management plans to develop innovative projects. There are no match requirements, and require close coordination with territorial and national CZM personnel.

NOAA Coral Reef Conservation Program Funding: Each year, funds are distributed to support coral reef conservation in states, territories and international locations. In 2015, over $700,000 was awarded for research and monitoring of USVI coral reefs, and over $600,000 was awarded for building capacity and improving management for US territories including the USVI. Typical awards range from $30,000-$80,000 per proposal and are funded for implementation activities. The current priorities are fishing impacts, land based sources of pollution, climate change, and emerging issues. If coordinated with other available funding sources either spatially or by topic, projects could leverage one another more effectively.

NOAA Coral Reef Conservation Program NGO Partnership: Each year funds are available to NGOs with demonstrated expertise in supporting coral reef management to submit proposals to establish partnerships with NOAA Coral Reef Conservation Program to further conservation of US coral reefs. In FY 2016, approximately $700,000 is expected to be available for initiating partnership(s) with up to four NGOs. Requests are typically between $100,000 and $700,000 per year and benefit multiple locations. A 1:1 non-federal match is required. Priorities currently for the US Virgin Islands regions are: fishing impacts, land-based sources pf pollution, climate change and emerging issues. The Nature Conservancy has received a grant through this funding opportunity for all coastal territories in the US. There is a high value to coordinate efforts and to integrate existing, ongoing outreach and education efforts on the ground.

NOAA Coral Zone Management 306, 306A, and 309 Funding: Each year NOAA provides Coastal Zone Management Funds in the form of 306/306 A and 309 funding. The allocation for 2016 for the USVI territory is $902,000, with an addition $19,000 in redirected 306 funds, and $20,000 in FY15 redirected 306 funds. Several sections of the CZMA authorize grant programs, including Sections 306, 306A and 309. Section 306 grants are known as administrative grants. Section 306 grants are used by the states to fund the administrative activities of their coastal zone management programs, including hiring of personnel. Coastal states are required to provide a one-to-one match for 306 funds. States making satisfactory progress implementing their plans are also eligible for Section 306A resource management improvement grants. H.R. 2669 expands the 306A grants and renames the resource management improvement grants coastal community conservation grants. These grants assist states with on-the-ground projects within the coastal zone, including preserving or restoring coastal habitat, redeveloping urban waterfronts and ports, and providing access to public beaches and coastal waters. participating coastal states may compete for coastal zone enhancement grants under Section 309. These grants can be used to strengthen the state programs in emerging areas of concern, such as wetland protection and restoration, increased public access to coastal areas, control of development impacts and protection from coastal hazards. Under current law, no matching funds are required for these grants.

NOAA Climate Program: For FY16, Coastal & Open Ocean Applications (COCA) will support interdisciplinary and applied research projects focused on 1) the development and application of methodologies to value ecosystems services and Natural-based Features approaches; and 2) mechanisms to incorporate these approaches into coastal adaptation efforts to support sustainable coastal communities and ecosystems in a changing climate. COCA intends to support projects up to $300,000 for up to two years. The number of projects funded and funding amount of all projects are subject to the availability of funding. Funds are awarded annually for research and implementation to improve ecosystem services for a resilient coast in a changing climate. The grant focuses on climate impacts and leveraging research and decision-making, promoting collaboration between scientists, engineers, decision-makers with private sector, NGOs, EPA etc, and developing tools and guidance to build capacity to integrate ecosystem services into management decisions. While this program is focused on climate change specifically, there is a possibility to coordinate with other programs. Specifically, a project designed to promote collaboration between scientists, engineers, contractors etc. could address climate change, as well as water quality improvement, through adaptation of infrastructure to increasingly intensive rainfall events. Creating networks of communication and collaboration among experts and practitioners is the scale and level needed for the Virgin Islands. Furthermore, it may be possible that identification of wetlands and wetlands conservation training could

fall into this funding priority as currently USVI at risk of further comprising many of the critical habitats that are providing resilience to climate change.

Clean Water State Revolving Fund Program (CWSRF): The Federal Water Pollution Control Act (Clean Water Act), as amended in 1987, established the Clean Water State Revolving Fund (CWSRF) program. The CWSRF program offers low interest financing agreements for wastewater treatment, nonpoint source pollution control, and watershed and estuary management. In May 2016, CWSRF received $4,129,000 from EPA to allocate to grants for water quality protection, improvements to wastewater treatment, controlling pollution from rainwater runoff, and protect sensitive waterbodies. CWSRFs offer:

- Low interest rates with flexible terms
- Significant funding for nonpoint source pollution control and estuary protection
- Assistance to a variety of borrowers
- Partnerships with other funding sources

Clean Water State Revolving Fund (CWSRF) programs combine the federal and state capitalization funds with other program resources including tax-exempt revenue bond proceeds, fund investment earnings, and loan repayments to provide low-interest loans for eligible projects. Some of the programs include:

- Wastewater infrastructure improvement loans
- Green Project Reserve –reduced CWSRF interest rates are used as incentives to encourage borrowers to submit projects for funding consideration. Project themes include:
    - *Energy Efficiency* – technologies and practices to reduce the energy consumption for water quality projects
    - *Water Efficiency* – technologies and practices to deliver equal or better services with less water
    - *Green Infrastructure* – practices that manage and treat stormwater, and that maintain and restore natural hydrology by infiltrating, capturing and using stormwater
    - *Environmentally Innovative Projects* – practices that demonstrate new/ innovative approaches to managing water resources in a more sustainable way, including projects that achieve pollution prevention or pollutant removal with reduced costs
- Nonpoint Source Loan Program/ Septic Rehabilitation Loan Program (SRLP) -- The SRLP provides financial assistance to moderate to low income homeowners to replace failing septic systems.
    - *Agricultural Non-Point Source Loan Program (AgNPSLP)* -- AgNPSLP funds are leveraged with Federal and State Cost Share assistance from Conservation Districts, to provide loans to poultry and dairy producers for manure storage/management, dead bird composters, and front end loaders.
    - *Leaking Storage Tank Remediation Loan Program (LSTRLP)* -- The LSTRLP provides loans to remove, retrofit, clean up contaminated sites, and corrosion protection for leaking underground storage tanks

- The LCLP is an innovative financing approach to fund land conservation easements and fee simple land purchases with CWSRF wastewater loans

Virgin Islands Nonpoint Source Program: The Nonpoint Source (NPS) Program administers a competitive grant made possible through Section 319 of the Federal Water Pollution Control Act (Clean Water Act). The grant provides funding for projects designed to reduce nonpoint source (NPS) pollution in the territory. NPS pollution may be defined as any pollution that originates from a diffuse source (such as an open field or a road) and is transported to surface- or groundwater through leaching or runoff. Reduction of NPS pollution may often be achieved through incorporation of specific best management practices (BMPs) into project workplans. Projects may target any source of NPS pollution, but most frequently involve agriculture, construction, marinas, septic systems, and hydro-modification activities.

Eligibility for NPS Program Funding

In other locations, a project can be sponsored by both public and private entities, including local governments, tribal authorities, cities, counties, regional development centers, local school systems, colleges and universities, local nonprofit organizations, state agencies, federal agencies, watershed groups, for-profit groups, and individuals. Project grants to individuals are limited to demonstration projects. Priority is often given to those projects whose goal is to improve the water quality of water bodies identified as having nonpoint source pollution impairments, as documented in: 1) The current 303(d) List as impaired due to a nonpoint source pollutant ;2) The current 305(b) Report as not fully supporting a designated use due to a nonpoint source; or 3) Any other documentation of nonpoint source pollution. Generally, the NPS Program may also prioritize funding according to additional environmental factors, such as land use and existing best management practices, if these factors can help determine where projects will be most effective at reducing nonpoint source pollution. Projects are usually one to three years in length. Grant recipients that failed to meet program requirements in the past may be ineligible to receive additional project funding.

Programs Supporting Capacity-Building

This section contains summaries of the major programmatic capacity-building opportunities, which are all more formal university-based capacity building efforts. There is a clear mismatch between the capacity building needs for the Virgin Islands NPS problem areas with the available programming. While the programs currently being implemented can provide increases in territory-wide capacity over a long-term time scale, the permanence of the capacity is highly dependent upon students and researchers remaining in the territory and directly influencing land and water management.

There is a need for non-university based, professional training and capacity building for those working in the trade and within the local agencies. At present, University of Virgin Islands does not offer a PhD program, however masters students can take advantage of some of these opportunities should they remain in the territory as agency-level personnel. With coordinated effort, the opportunities below could be integrated more effectively to target specific problem areas in the Virgin Islands, or tackle specific water quality management questions or needs. Presently, these awards appear to be made independently without consideration of the leveraging potential.

National Sea Grant Fellow Program. Three major programs support short-term graduate work.

- *Knauss Marine Policy Fellow* – Supports eligible students who are enrolled towards a graduate or professional program interested in ocean, coastal resources and in national policy decisions affecting those resources. Assignment length is typically one year, with official fellowship dates February 2017-January 2018.

- *SeaGrant-NMFS Exchange Program* – Awards funds for personnel exchanges or assignments between SeaGrant Programs and National Marine Fisheries Service Science Center (closest one is Miami Florida) for 1-12 months. Up to $200,000 may be available for SeaGrant outreach.

- *NOAA Fisheries SeaGrant Fellowship* – Supports a graduate student fellowship program in population and ecosystem dynamics and marine resource economics, limited to for US citizen graduate students enrolled in a PhD program.

NOAA Coastal Management Fellowship. The coastal management fellowship was established to provide on-the-job education and training opportunities in coastal resource management and policy for postgraduate students and project assistance to state CZM programs. The program matches postgraduate students with state CZM programs to work on projects proposed by the state/territory. This is a 2-year opportunity. There have few been coastal management fellows directed to the Virgin Islands since 2006. Work has involved matching from Stateside Universities to match with the U.S. Virgin Islands Coastal Zone Management Program to develop, implement, and operate a functioning geographic information system (GIS) office for the program by inventorying needs, creating a GIS database, and training the staff on using the software. More recently a fellow was matched to create a community involvement and outreach pertaining to coral health and land management. The advantage of this program is it provides an infusion of external knowledge into the local agency (e.g. CZM) to help to boost existing programs or develop new ones – a disadvantage is once the fellowship has ended, the "pulse" of project related activities typically subsides, unless locally-based personnel can fill the personnel gap once the fellowship has ended.

Virgin Islands Marine Advisory Service (University of Virgin Islands/University of Puerto Rico SeaGrant). The focus of this program is education and outreach in the Virgin Islands territory, with emphasis on local communities and youth programs and events. The program currently funds two full time staff, one person on St. Croix, and one on St. Thomas to increase the general public's awareness and understanding of the marine resources and marine affairs. They focus on educational summer enrichment, beach cleanups, field trips and promoting coastal conservation events.

USGS Internship Program: The Coastal and Marine Science Center in St. Petersburg, Florida conducts research on coral reef resilience, forecasting future change, and guiding management decisions in coastal communities. This internship program is designed to provide students from high school to graduate level with opportunities to work with USGS scientists. Though this program has not been

implemented in the US Virgin Islands, the St. Petersburg Science Center does have a field station on St. John, USVI and collaborations could be strengthened to promote opportunities for local USVI students.

NOAA Fisheries Sea Grant Fellows: A graduate fellowship for PhD students is provided for students to research population and ecosystem dynamics and marine economics to better assess fishery stock conditions and dynamics. This could be applied to territories either by having local USVI students in universities offering a PhD be a recipient or by having recipients focus their research on USVI marine resources. Through working with EpSCOR and University of Virgin Islands Center for Marine and Environmental Studies, students could be encouraged to apply for, or research could be directed towards Virgin Islands coastal management issues affecting water quality.

Coordination. Other competitive awards from NOAA Coral Reef Conservation Projects 2015 include: 1) Building capacity for coral reef resource management in territories including USVI (awarded to Nature Conservancy): $580,000; 20 Supporting USVI government initiatives within USVI and collaborations throughout the Caribbean to improve effective management of reefs

The following table provides additional information about relevant programs.

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
National Sea Grant Fellow Program	Sea Grant	$25,000	Should provide useful information complementing any effort to mitigate shoreline erosion, beach degradation or promote development of resilient coastal communities	Capacity Building Training	http://seagrant.oarhq.noaa.gov/Home.aspx	Outreach/Education, Planning, Research, Restoration, Water Quality, Watershed Management, Wetlands, Wildlife	Research projects constitute an indispensable component of achieving goals. UPR Sea Grant critical source of funding for large and small research projects that produce information needed for development of sound management plans for decision making in PR and USVI.	Through collaboration with UVI, CZM and DPNR could enter agreement with Puerto Rico Seagrant to try to (1) promote eligible candidates for Seagrant (2) identify projects for fellows (those in PR) could focus on USVI, and build capacity over time	While PR Seagrant program officially services USVI, no USVI student has been awarded fellowship. A few studies have been conducted on USVI, as research projects.
NOAA Office for Coastal Mgt. Fellowship	NOAA	$34,000 per year (2 years)	Provides on-the-job education and training opportunities in coastal resource management and policy for postgraduate students.	Capacity Building Training	http://coast.noaa.gov/fellowship/	Coastal Management	2 year opportunities available to students completing a master's, doctoral, or professional degree in natural resource management or environmental-related studies from an accredited U.S. university between January 1, 2014, and July 31, 2015.	UVI EPSCoR and Inst. Marine Sciences could help identify (1) USVI local students that are eligible for fellowship, (2) establish stronger relationships with universities in US (FL, PR, VA) with strong coastal programs to have student projects focus on priority implementation needs	Must be advanced degree, post graduate from university
Virgin Islands Marine Advisory Service (UVI & UPR Seagrant)	UVI	Funds 2 full time staff (St Croix, and St Thomas)	Community outreach and education (especially youth!): wetlands, marine debris, Non-point source pollution, coral reefs	Capacity Building Training, Education and Outreach	http://uvi.edu/community/virgin-islands-marine-advisory-service/default.aspx	Increase general public's awareness & understanding of marine resources and marine affairs. Increase interest of marine career opportunities for youth.	Offer educational summer enrichment programs, organize beach cleanups, field trips for teachers/students, Promoting ocean conservation events; Assist coastal planning and decision-making to foster a balance between development and our living and non-living resources.	Excellent outreach being conducted on ST Thomas and St Croix by staff	Two staff for island population of > 100,000 spread across 3 islands.

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
USGS	Department of Interior	Varies	USGS Internship Program designed to provide students from high school to graduate level with opportunities to work in agencies and explore federal careers	Capacity Building Training	http://www2.usgs.gov/humancapital/sw/studentinterns.html	Coastal and Marine Science Center in St. Pete has programs for undergraduate and graduate students, including paid hourly employment, internships, research assistantships.	Topics include: Improve understanding and information about coral reef resilience; Advance ability to forecast future changes, guide management decisions.	Currently, there is not a strong tie with USVI students and Coastal and Marine Science Center, but the opportunity exists.	Need to establish better ties and incentives between UVI and Coastal and Marine Science Center in St. Pete, FLA.
NOAA Fisheries Sea Grant Fellows	NOAA	$46,000 per year	Graduate Fellowship Program in population and ecosystem dynamics & marine resource economics.	Capacity Building Training	http://seagrant.noaa.gov/fundingfellowships/nmfssgfellowship.aspx	Population and ecosystem dynamics involve the study of fish populations and marine economics to better assess fishery stock conditions and dynamics.	To encourage applicants to pursue careers in population assessment or marine resource economics, increase expertise in this field, foster closer relationships, provide real world experience- Applies to territories.	UVI EPSCoR and Institute of Marine Sciences could help identify (1) USVI local students in universities that are eligible for fellowship, (2) establish stronger relationships with universities in US (Florida, Virginia) with strong coastal programs to have student projects focus on priority implementation needs	PhD candidates only; no prior USVI students or locals. Could recruit from USVI for graduate students in PR or FLA

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
Office for Coastal Management Grants & Coop Agreements	NOAA	$30,000-1.7 million	Varies by RFP, no- profits are eligible; Collaborative projects awarded	Innovative projects not addressed by competitive funding	https://coast.noaa.gov/funding/_pdf/NOAA-BAA-NOAA-NFA-NFAPO-2016-2004791-posted-12.30.2015-closing-09.30.2017.pdf	Current priorities are 1) climate adaptation and mitigation, 2) weather ready nation, 3) healthy oceans, 4) resilient coastal communities & economies	Enhancement cycle- 2016-2020-Wetlands and coastal hazards priorities applicable to reducing NPS		Administratively complex, need considerable local and national coordination, cooperative agreements need to adhere to strict guidelines and accounting procedures and documentation
CZM Projects of Special Merit Competition -	NOAA	$50-$200,000 per proposal	Proposals submitted to focus on 1) Hazards, 2) Ocean Planning in 2016	Implementation	https://coast.noaa.gov/funding/_pdf/noaa-nos-ocm-2016-2004595-ffo-posted-10.13.2015.pdf	Proposals must focus on: Hazards: Preventing or significantly reducing threats to life and property or Planning- for the use of ocean- multi-issue planning	the objective of Section 309 is to encourage territories with federally approved CMPs to improve their program. The intent of the Projects of Special Merit funding is to offer CMPS the opportunity to develop innovative projects that further their approved enhancement areas strategies: in this case 1) Hazards or 2) Ocean Planning	No match requirements under this competition	Competitive, requires strong working relationship with CZM staff. Call for proposals in Dec 2016

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
NOAA Coral reef conservation program	NOAA	30,000-$80,000 per proposal	Coral Reef Conservation Program awards funds :1) CRCP Domestic Coral reef conservation grants, 2) Intl Coop Agreements, and 3) CRCP Coral Reef NGO partnership.	Implementation	http://coralreef.noaa.gov/aboutcrcp/workwithus/funding/grants/welcome.html	Watershed management: 1) Fishing Impacts; 2) Land-Based Sources of Pollution; 3) Climate Change; 4) Local/Emerging Mgt. Issues. Reduce pollutant loading from priority watersheds	CRCP Domestic Coral Reef Conservation Grants (Applicants: Institutions of higher education, non-profit organizations, for-profit organizations, and local and Indian tribal government agencies);	In 2015, supports coral reef monitoring program for USVI: $580,000; UVI study on recovery of corals in USVI; High resolution coral based sedimentation records study for developed and undeveloped watersheds on St. John by U Mass; Sediment reduction education and outreach in Coral Bay, St. John, by CBCC	In 2016- announcing new awards in separate categories- CRCP Domestic; CRCP Intl; CRCP NGO funds;
NOAA Coral reef conservation program NGO Grant	NOAA	100,000 - $700,000 per state, territory	For NGOs that have demonstrated expertise and experience in supporting coral reef management in U. S. States and Territories	Implementation	https://coast.noaa.gov/funding/_pdf/NOAA-NOS-OCM-2016-2004583-ffo-posted-10.20.2015.pdf	1) Fishing Impacts; 2) Land-Based Sources of Pollution; 3) Climate Change; 4) Local/Emerging Management Issues. Reduce pollutant loading from priority watersheds	For NGOs to establish partnerships with NOAA CRP to further conservation of US coral reefs.	TNC received a grant through this funding opportunity for all coastal territories in the US. Would be valuable to coordinate efforts and understand how this could integrate with existing, ongoing outreach and education efforts on the ground.	Deadline Jan 21, 2016

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
NOAA CZM 306A allocation	NOAA	allocation annually	CZMA Section 306 and 309 funds support NOAA's strategic priorities that 1) lead to resilient coastal communities that can adapt to climate change, incorporate risks of sea level rise, support sound ocean mgt maintain and improve coastal water quality.	Implementation	https://coast.noaa.gov/czm/media/fy16finalguidance.pdf	Next Generation Strategic Plan: NOAA's Vision for Future is 1) Climate adaptation and mitigation, 2) weather ready nation, 3) health oceans, 4) resilient communities.	See final guidance Section 306 are administrative grants;	DPNR receives 306 A funding each year. (More administrative - funds staff)	Requires state matching and competitively awarded

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
NOAA CZM 309 Funding	NOAA	$75,000 - $250,000 per project each year	https://coast.noaa.gov/czm/media/Sect-309_Guidance_June2014.pdf	Implementation (enhancement areas	https://coast.noaa.gov/czm/media/Sect-309_Guidance_June2014.pdf	1) to protect, restore, enhance and create wetlands, 2) eliminate development in hazardous areas, 3) reduce marine debris, control cumulative impacts, 4) others non applicable to NPS	Strategies developed through local Coastal Management Program process; following self-assessment, NOAAs OCRM works closely with each CMP to identify high priority needs for improvement within one or more of the nine areas. Then they develop strategies to improve operations to address these management needs. Strategies provide a stepwise approach to reach a stated goal and lead to enhancement in the territory's approved CZM program	Other competitive awards from 2015 1) Building capacity for coral reef resource management in territories including USVI (awarded to Nature Conservancy): $580,000; 20 Supporting USVI government initiatives within USVI and collaborations throughout the Caribbean to improve effective management of reefs With better coordination and focus of funded projects such as this, with future implementation priorities identified in this and other projects and by CZM, the opportunity to focus efforts in hotspots pollutant source locations exists.	Programs that develop an assessment and strategy to improve CMP are eligible for funding. 2009 Recommendations: staffing issues involved with operation and management of VICZMP was major problem. VI has difficulty hiring, retaining well qualified staff in sufficient numbers hampering effectiveness of program- two mandatory recommendations providing in 2009
Clean Water State Revolving Fund	EPA	Depends	Construction grants for wastewater treatment are available to territories	Implementation	http://www2.epa.gov/cwsrf	Construction of wastewater treatment for USVI	The U.S. EPA allotted $8,249,000 to USVI to help finance improvements to water projects essential to protecting public health and the environment. Funds will be used to upgrade wastewater systems and drinking water systems throughout the territory.	Administered by VI DPW -allotted $4,129,000 in 2016. Clean water fund provides grants to make improvements to wastewater treatment systems, control pollution from rain water runoff, protect sensitive water bodies and estuaries. Drinking Water Revolving Fund program, administered VIDPNR allotted $4,120,000. Provides grants to finance improvements to drinking water systems, with focus on providing funds to small and disadvantaged communities	Implementation, administration and use of those funds. 8 million awarded to VI

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
EPA State Revolving Fund	EPA		Loans need to be repaid, revolved to capitalize that fund	Implementation	http://water.epa.gov/grants_funding/dwsrf/allotments/basicinformation.cfm	NPS, storm water retrofit		Typically loan, give free money if they want to. Utility authority could move loan to that entity, to support conversion of failing septic tanks	
EPA 106 Funds									Administrative
EPA 319 Funds									Administrative
Five Star and Urban Waters Restoration Grant	NFWF	$20,000 - $50,000 per proposal 1-2 years	Stewardship and restoration of coastal, wetland and riparian ecosystems.	Implementation, education and capacity building	http://www.nfwf.org/fivestar/Pages/home.aspx	1) restoration, 2) Community Partnerships, 3) Environmental Outreach, education and training, 4) measurable results, 5) Sustainability	There is a broad range of activities that could be supported through this funding source that contribute to improved water quality. To meet the conservation needs of important species/habitats, providing measurable and meaningful conservation and educational outcomes	Many	Should explore feasibility

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
US Economic Development Assistance	EDA, Dept Commerce	$80,000 - $200,000, Must apply	Solicits applications from rural/urban communities to develop initiatives that advance new ideas and creative approaches to address rapidly evolving economic conditions.	Implementation	http://www.eda.gov/funding-opportunities/	May include demolition, renovation, construction of public facilities; provision of water or sewer infrastructure; or the development of stormwater control mechanisms as part of an industrial park or other eligible project.	Solicits applications from applicants in rural/urban areas to provide investments that support construction, non-construction, technical assistance, and revolving loan fund projects under EDA's Public Works and EAA programs.	Designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities.	Indirect linkage
Conservation Partners	NRCS	$50,000 - $100,000	Funded through CP provide staff and technical assistance to private landowners in places were some of nation's most crucial conservation issues can be addressed thru Farm Bill programs.	Capacity Building Training	http://www.nfwf.org/ConservationPartners	Funding priorities seek to build capacities in: conservation planning, wetlands etc. Focus is to place "boots on the ground" to maximize outreach to private landowner.	USDA NRCS, NFWF & other regional/initiative specific partners. Provides grants on competitive basis to support field biologists and other habitat conservation professionals working with NRCS field offices in providing technical assistance to farmers, ranchers, foresters and other private landowners to optimize wildlife habitat conservation on private lands.	Indirect link would need researching to determine feasibility. Aims to better focus and increase the effectiveness of Farm Bill assistance through programs such as Wildlife Habitat Incentives Program (WHIP), Environmental Quality Incentives Program (EQIP), Conservation Reserve Program.	No projects in Territory, not sure if they fund. Unlikely source of funding. Source for EQIP funds. Should explore whether Farm Bill program applies in the USVI. May be small amount of targeted funding opportunity for St Croix

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
Aquatic Ecosystem Restoration CAP 26	US Army Corps	$50,000-$5,000,000	Army Corps can partner with non-federal sponsor to develop projects that restore degraded aquatic ecosystems. Includes creating wetlands or improving wetland vegetation quality. Feasibility study determines it technically feasible, environmentally acceptable, and cost effective.	Not sure- no current RFP		Coastal Waters, Floodplains/Riparian Zones, Green Infrastructure/LID, Restoration, Watershed Mgt, Wetlands; Antilles Office main functions are civil works tasks in the areas of flood damage protection, navigation, military munitions response and other Corps areas of expertise.	A letter requesting a study or project under Section 206 is written to the Army Corps. Current and near future projects include:Rio Puerto Nuevo Flood Control Project; Portugues-Bucaná Rivers Flood Control Project (Portugues Dam); Rio Grande de Arecibo; Río Ojo de Agua	Needs investigation. May be feasible in some problem areas such as Cruz Bay, Enighed Pond, Bovoni Dump. Must meet definition of an Estuary Habitat Restoration Activity in section 103 of the Estuary Restoration Act, as amended. Antilles office works in PR.	Collaboration with Army Corps, limited funds available.

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
USDA EQUIP Program	USDA	$54-$450,000	Financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air and related resources on agricultural land and non-industrial private forestland.	Capacity Building Training	http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/financial/eqip/?cid=stelprdb1242633	Nonpoint Source Control, Outreach/Education, Planning, Pollution Prevention, Restoration, Source Water Protection, Water Conservation, Watershed Management, Wetlands, Wildlife	Provides financial & technical assistance to agricultural producers for natural resource concerns and deliver environmental benefits (improved water/ air quality, conserved ground and surface water, reduced soil erosion and sedimentation or improved or created wildlife habitat.voluntary conservation program for agricultural producers to address significant natural resource needs and objectives.	The former Wildlife Habitat Incentive Program was folded into EQIP. Offers financial assistance max term of ten years, to implement eligible conservation practices, owners of land under agricultural production or who are engaged in livestock or agricultural production on eligible land.financial and technical assistance.	Not clear if USVI would qualify for EQUIP funding. Need to explore, funds are for agricultural producer and owners of non-industrial private forestland and other farm or ranch lands.
Nonpoint Source Implementation Grants (319 Program)	EPA	$400,000-$2,000,000	Wide range of activities	Implementation	http://www2.epa.gov/polluted-runoff-nonpoint-source-pollution/319-grant-program-states-territories-and-tribes	NPS projects can be used for a wide range of activities including agriculture, forestry, construction, and urban challenges		NPS projects include installation of best management practices (BMPs) for animal waste; design and implementation of BMP systems for stream, lake, and estuary watersheds	

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
NOAA Climate Program	NOAA	$50,000 - $300,000 per year	Supports interdisciplinary applied research projects focused on development and application of methods to value ecosystem services and incorporate these approaches into coastal adaptation efforts to support coastal communities and ecosystems in a changing climate.	Research and Implementation	http://cpo.noaa.gov/GrantsandProjects/ClimateProgramOfficeFFO.aspx	The "Ecosystem Services for a resilient Coast in a Changing Climate" funding opportunity within this grant.	Focuses on: (1) Leverage research and decision making with NGOs, private sector, NGOs, EPA, etc. (2) Promote collaboration between scientists, engineers, decision makers (federal/local) practicioners). (3) Develop tools or guidance to build capacity of decision makers to integrate ecosystem services into management decisions, High-priority climate science, assessments, decision support research, outreach, education, and capacity-building activities designed to advance the understanding of Earth's climate system and to foster the application of this knowledge to enable effective decisions.	Coordinate with needs on the ground, specifically capacity building component by hosting workshops. Specifically targets promoting collaboration between scientists, engineers, contractors and practicioners to enable effective decisions for changing climate. Climate change and protection of water quality could easily be tied to one another, to fund the development of trainings, workshops and network building (which is sorely needed) in the USVI on topics relevant to both. Possible that identification of wetlands and wetlands conservation training could fall into this funding priority. USVI at risk of comprising critical habitats providing resilience to climate change.	Would need to get people thinking out of the box, and establish linkages and relationships among unconventional lines across disciplines. Indirect linkage. Need coordination and a champion to foster relationships and identify mechanism to breakdown barriers for coordination and collaboration and create innovative ways to join forces.
National Integrated Water Quality Program (NIWQP)	USDA	180-$660,000		Research, education	http://nifa.usda.gov/national-integrated-water-quality-program-frequently-asked-questions	Improving water quality in agricultural and rural watersheds.	(1) Animal manure and waste management (2) Drinking water and human health (3) Environmental restoration (4) Nutrient and pesticide management (5) Pollution assessment and prevention (6) Watershed management (7) Water conservation (8) Water policy and economics		

Program	Agency	Funds	Type of program	Type	Website	Focal Areas	Details	Opportunities	Constraints
Environmental Solutions for Communities	NFWF, Wells Fargo	$25,000 - $100,000	NOT focused on Virgin Islands 2016 currently	Capacity Building Training			(1) supporting sustainable agricultural practices/private lands stewardship; (2) conserving critical land/ water resources and improving local water quality; (3) restoring natural habitat, species and ecosystems for community livelihoods; (4) facilitating investments in green infrastructure, renewable energy and energy efficiency; (5) encouraging citizen participation		
CZM Administration Awards	NOAA	2.0 million	Uncertain			Grants of 1 million			
CZM Enhancement Grant	NOAA						USVI did not develop a strategy and assessment. Unclear of options		
EPA Wetlands Program Development	EPA Region 2	$25,000 - $500,000	EPA's assessment, voluntary restoration/protection, and water quality standards for wetlands	Capacity Building Training		protect and restore wetlands	Wetland Program Development Grants encourage comprehensive wetlands program development by promoting the coordination and acceleration of research, training, demonstrations, surveys, and studies relating to water pollution.	Projects build capacity to effectively protect wetland and riparian resources. Support building or refining a wetlands program through four core elements of a wetlands program: regulation, monitoring/	Nothing since 2011
Clean Water Act			Runs the surface water grants for the states.				Supports staff, monitoring assessment, watershed planning, not sure it can be used for implantation.	Formula negotiated that tells how much the states receive vs what they match.	
EPA Section 604b; 205j	EPA								

Linking Programs with Implementation Actions

This section and the table below provides a synthesis of the major activities identified and programs available to reduce pollutants within the USVI. Major activities include increasing technical assistance capacity and training, infrastructure improvements, planning, and policy-driven actions.

Activity	Scale	Description	Potential Sources of Funding	Responsibility	Effectiveness
Certified Water Quality Laboratory	St Thomas	Improvements to existing lab, collaborative system with a certified lab, or alternative strategy	Territorial government University Virgin Islands (UVI) NIWQP	CZM NPS NGO Whomever is conducting water quality sampling	A certified water quality laboratory has been identified as a priority by territorial and federal resource managers and NGOs, as an obstacle to accurate, timely information.
Water Quality Training	Island by Island	Staff training in water quality monitoring, sample handling, equipment maintenance	NOAA Coop Agreement NOAA Coral Reef Conservation Program (CRCP) NOAA NGO Program (CCC & SEA) joint proposal NIWQP	Whomever is conducting water quality sampling	For those working in water management, it is important to understand the rationale for and be practically competent in the sampling of water and the measurement and interpretation of water quality parameter
Workshop on Wastewater engineering and training	Island by Island	Staff training in wastewater engineering and management	NIWQP Clean Water Revolving Fund	Territorial Government Small Package Plants Local architects Local Contractors	A training program and collaborative network of resources that provides access to wastewater experts from large scale treatment plants to small scale septic systems has been identified as a priority.

Activity	Scale	Description	Potential Sources of Funding	Responsibility	Effectiveness
Wastewater engineering consultant	Territory -wide	On Call Technical Support person	NOAA 306 NOAA 309 Clean Water Revolving Fund Coastal Services Center Army Corps	Territorial Government Small Package Plants Local architects Local Contractors	This could be an off-island contractor or service center to provide advice and input on trouble shooting problems as they arise
Workshop with CZM, developers/contractors, realtors and architects' ways to reduce NPS	Island by Island	Bring together on the ground people to identify mechanisms to remove barriers to implementing BMPs and NPS reduction	Clean Water Revolving Fund NOAA Cooperative Agreement NOAA Coral Reef Conservation Program 5 Star NRCS Conservation Partner NIWQP NFWF	Currently each individual project responsible for managing NPS, as no regulatory mandate.	A certification program for erosion and sediment control ensures everyone involved in land disturbing activities is aware of proper practices, maintenance, and erosion control
Workshop for wetland identification	Territory -wide	Bring together CZM, NGOs, NPS, and realtors to ID wetland and understand regulations.	NOAA NGO NOAA 306A Clean Water Revolving Fund Army Corps (Aquatic Restoration) 5 Star NRCS Conservation Partners NOAA Climate Program NFWF	Currently CZM site inspectors make decisions about wetlands delineation; real estate agents sell properties that are wetlands, building permits are being approved on wetlands, and home buyers and builders do not have access to reliable information	Accurately characterizing wetland areas before they are compromised will avoid creating future issues, and maintain resilience of ecosystems critical for climate change.

Activity	Scale	Description	Potential Sources of Funding	Responsibility	Effectiveness
Create working group with UVI, CZM, DPNR, NPS to integrate USVI research and management	Territory -wide	Create a working group (network) which could meet virtually or bi-monthly to facilitate integration of research into management, and to drive research into direction to answer management questions	NOAA Climate Program NFWF EPSCoR EQUIP(?) Conservation Partners Seagrant	Currently government managers and individual researchers must reach out project by project basis, EPSCoR and Center for Marine & Environmental Studies is working to integrate research and management,	
Create/support programs that target youth environmental education and field projects	Island by Island	To increase locally sourced capacity, programs that offer field based environmental programs to local youth. Can support existing programs or organizations to add water quality component	EPSCoR NFWF5 StarNOAA NGO Grant Seagrant	Currently Center for Marine & Environmental Studies and local NGOs conduct most of environmental outreach for youth	
Infrastructure Projects and Planning					
Road and culvert assessment	Territory	Comprehensive road survey	Clean Water Revolving Fund Army Corps USEDA NOAA Climate Program NIWQP	DPW responsible for public roads, individual property owners responsible for private, and NPS responsible for National Park Service roads	

Activity	Scale	Description	Potential Sources of Funding	Responsibility	Effectiveness
Wetlands acquisition and protection planning	Territory	Host territory wide planning to identify priority wetlands for acquisition/protection/mediation	NGOs (?) EPA Wetlands Program NFWF NOAA Climate EQUIP 5 Star	Currently individual property owners can sell undevelopable lands (including wetlands). Need to develop incentives to retain wetlands in natural state.	Proven effective in many other locations. Where wetlands protected in USVI, benefits documented
Infrastructure repair on private roads	Project scale	Culvert repair, hillside stabilization, road maintenance, gut maintenance	Clean Water Revolving Fund CZM Special Merit NOAA 306 NOAA 309 5 Star EDA NIWQP	Currently individual property owner responsible for road repair, stabilization and maintenance. Owner bears all of the costs, without penalty for addressing NPS problems so few incentives for addressing NPS	
Infrastructure repair on public roads	Project scale	Culvert repair, hillside stabilization, road maintenance	Clean Water Revolving Fund CZM Special Merit NOAA 306 NOAA 309 5 Star EDA NIWQP	Terriitorial Government	

Activity	Scale	Description	Potential Sources of Funding	Responsibility	Effectiveness
Culvert Maintenance	Project scale	Use DPW GIS layer for priorities	Clean Water Revolving Fund CZM Special Merit NOAA 306 NOAA 309 5 Star EDA NIWQP	Territorial Government Land Owner	
Stormwater retrofits	Project scale	Areas generating stormwater runoff (parking lots, rooftops, roadways, compacted areas) to install stormwater management to capture and treat runoff	Clean Water Revolving Fund CZM Special Merit NOAA 306 NOAA 309 5 Star EDA NIWQP	Territorial Government Land Owner	
Repair/restoration at key outlet points where land-based NPS discharges into ocean	Project scale	Waterfront businesses, restaurants, hotels and tourism destinations are often last point before discharge of NPS into ocean	Clean Water Revolving FundCZM Special Merit NOAA 306NOAA 3095 StarEDANIWQP	Individual land owner	Excellent opportunity
Pollution prevention	Project, island and territory scale	Commercial businesses, public facilities, trash collection areas, outdoor materials storage, waste management	Clean Water Revolving Fund CZM Special Merit NOAA 306 NOAA 309 5 Star EDA NIWQP	Individual land owner	

Activity	Scale	Description	Potential Sources of Funding	Responsibility	Effectiveness
Dump improvements	Project scale	Each island has serious problems with the major landfill/dump which is causing NPS	EPA Superfund EPA 319	Territorial Government	
Wetland restoration/protection	Project scale	Site specific restoration activities	5 Star Army Corps (typically larger projects) NOAA NGO	Individual land owner	
Holding tank pump out station for live aboard vessels	Island scale	Either mobile or in situ system for pumpout	Clean Water Revolving Fund EDA NIWQP		Assessment of how many vessels have holding tanks would determine feasibility. Many use land-based facilities.
Wastewater enhancement projects at targeted shoreline/waterfront locations	Project scale	Improvements of existing wastewater treatment at key waterfront facilities at restaurants, marinas, and harbors	NFWF NIWQP EPA 319 5 Star EDA Clean Water Revolving NOAA 309	Individual land owner	Excellent opportunity
Contaminant and pollutant cleanup in wetlands, salt ponds and lagoon areas	Project scale	Site specific restoration activities	NOAA 309		
Small pipe outfall discharges	Project scale	Upgrade/maintain any outfall pipe discharges	NOAA 309		

Activity	Scale	Description	Potential Sources of Funding	Responsibility	Effectiveness
Gut stabilization projects	Project scale	Stabilization, erosion control, buffer protection	CZM Special Merits NOAA 309	Territorial Government	High Priority locations island wide
More autonomy for CZM inspectors	Territory	Citation authority for inspectors at building sites			
Fiscal support for barriers to 319-H funding	Unknown	Requests by NGOs to support 319 funds targeted towards construction			
CZM enforcement staff	Territory	Staff was cut substantially so capacity for inspections is limited			
Assessment of pollutants and potential listings by EPA					
Monitoring of BMPs	Territory	Implementation of a monitoring program for site-specific projects (pilots)	EPA 319Clean Water Revolving Fund NOAA 309Student Researcher	Individual land owner	
Rainfall monitoring	Territory	Continuous climate and water			