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Task 47

11/15/2022

George Washington Regional Commission
Coastal Zone Management
Technical Assistance & Advancing Ecosystem &
Community Resilience Report FY2021



Virginia Coastal Zone
MANAGEMENT PROGRAM



Fiscal Year 2021 Coastal Zone Management Technical Assistance & Advancing Ecosystem & Community Resilience

Final Annual Report

November 2022

George Washington Regional Commission

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And many others who participated and contributed to an exciting year of enhancing coastal resiliency in the GWRC region.

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Product #1: Training and Coordination Activity Outcomes

A. CZM Coordination Meetings

George Washington Regional Commission (GWRC) staff and consultant participated in the following statewide CZM-related meetings:

1. 11/17/21 – Virtual CZM Coastal Partners Workshop
2. 11/19/21 – Virginia Coastal Resilience Master Plan (VCRMP) Technical Advisory Committee (TAC) Meeting
3. 12/7/21 – VCRMP Phase I Release Meeting
4. 1/26/22 – Coastal PDC Quarterly Meeting hosted virtually by Crater PDC and the Virginia CZM Coastal Policy Team (CPT) Meeting
5. 3/15/22 – Coastal Virginia Shoreline Stakeholders Group
6. 5/31/22 – GWRC hosted the Coastal PDC Quarterly Meeting with Virginia CZM staff, including a tour of Crow’s Nest Natural Area Preserve
7. 9/14/22 – Virginia CZM CPT Meeting
8. 9/16/22 – VCRMP TAC meeting to discuss the VCRMP Phase II
9. 9/21/22 – Coastal PDC Meeting hosted by Hampton Roads Planning District Commission (HRPDC) with a tour of the SWIFT wastewater treatment facility

As well as numerous other smaller meetings and communications, which included the following: presentations and/or discussions on Virginia CZM program updates, the Virginia CZM Resilience Project Database, the VCRMP, the Resilience Adaptation Feasibility Tool (RAFT), native plant implementation, ecotourism, future grant focal areas, and Chesapeake Bay Preservation Act (CBPA) regulations, among other topics. GWRC staff have also presented information on CZM-related activities to the GWRC Board monthly. GWRC staff also regularly attended meetings of the Rappahannock River Basin Commission (RRBC) Technical Committee, the York River and Small Coastal Basins Roundtable (YRSCBR), American Planning Association (APA) legislative recaps, Wetlands Watch Community Rating System (CRS) Workgroup meetings, and the Rappahannock River Roundtable.

B. Regional Environmental Managers Technical Committee Meetings

The GWRC Regional Environmental Managers Technical Committee (REMTC) includes: city and county planning, parks and recreation, and other department staff, town managers, representatives from state agencies (including the Virginia Department of Environmental Quality (DEQ), the Virginia Department of Conservation and Recreation (DCR), the Virginia Department of Health (VDH), and the Virginia Department of Emergency Management (VDEM)), Soil and Water Conservation Districts, and occasionally elected officials, as well as stakeholders and professionals from universities, nonprofits, military installations, and private organizations.

GWRC hosted quarterly coordination and training meetings for the REMTC on:

1. December 15, 2021 (jointly with Crater PDC)
2. February 15, 2022
3. March 15, 2022
4. April 19, 2022

5. May 17, 2022
6. June 21, 2022
7. July 19, 2022
8. September 20, 2022 (jointly with Crater PDC)

The purpose of these meetings was to bring together regional stakeholders to discuss topics of mutual interest in the spheres of water quality, resilience, hazard mitigation, energy, stream and shoreline protection, wildlife and habitat protection, and other topics centered around resiliency, the green economy, and environmental protection. The topics were explored through trainings and discussions on any new or revised regulatory changes, best management practices, exploring grant opportunities, exposing stakeholders to new ideas, and other matters relevant to the group. This forum has been effective in facilitating and propagating the latest changes in the stormwater regulations and best practices. The meetings were especially important for sharing grant opportunities which could further other regional environmental initiatives. GWRC also collaborates with other planning regions wherever possible, as with the meetings held jointly with Crater PDC – a region that shares many characteristics geographically and demographically with GWRC.

In addition to more general conversations about resilience and local issues, the meetings included the following training presentations:

- **12/15/21:** “Addressing Equity in Floodplain Management in Virginia” – Angela Davis, DCR; and “Virginia’s Dam Safety Program: How We Collaborate with Localities” – Mark Kilgore, DCR
 - DCR staff Angela Davis gave a presentation on how DCR and other state agencies are approaching equity and environmental justice in resilience and conservation. This included an overview of what justice and equity mean, how flooding and other coastal hazards impact communities differently, recent environmental justice decisions based on new Virginia laws (such as the denial of the Mountain Valley Pipeline compressor station), and other regulations and policies. Mark Kilgore of DCR gave a presentation on dam safety, regulation, monitoring, classification, and potential remediation funds. This included an in-depth look into Emergency Action Plans, dam inundation zones, the statewide inventory of dams and DCR’s efforts to categorize them, and relevant regulations to planning and dam monitoring.
- **2/15/22:** A training on current and upcoming Infrastructure Investment and Jobs Act (IIJA) and other grants, and a training on completed updates to the VCRMP and how to use the maps for long-range planning – Friends of the Rappahannock (FOR) and The Berkley Group
 - Lindsay Edwards of The Berkley Group gave a presentation on several IIJA grants being funneled through Virginia State Agencies that have a nexus with resilience topics in the region, including energy (especially utility-scale and residential solar and electric vehicles), transportation, coastal resilience, and other topics. Luke Peters of The Berkley Group gave an overview of updates to the completed Phase I of the VCRMP, including how to view and interpret the data, how to access the datasets, and how to apply the Phase I results to long-term resilience planning in the region.
- **3/15/22:** An interview with Caroline County staff on how to address the environmental issues of large-scale solar – Craig Pennington and David Nunnally, Caroline County
 - Luke Peters of The Berkley Group conducted an interview principally with Craig Pennington, a planner for Caroline County, with additional input from David Nunnally,

Caroline County's now-former environmental planner. Caroline County recently underwent a multi-year process to develop regulations for utility-scale solar facilities, and shared some of their novel approaches and major concerns, including limiting the disturbed area to 100 acres at a time, calculating sheet flow runoff and the need for backup stormwater BMPs, impervious area calculations, and other environmental concerns. This was followed by a group discussion on solar regulations.

- **4/19/22:** A presentation on the Nags Head's Electric Vehicle (EV) Action Plan and group discussion – Duke University Nicholas School of the Environment Master's Students
 - In light of IJJA funding and other opportunities and the general need to plan for EV infrastructure in the GWRC region, Duke University students presented their capstone project – an Electric Vehicle Action Plan for the town of Nags Head, NC. The presentation noted some of the unique circumstances relating to the town, which sees its population multiply during tourist season, how businesses could cooperate and benefit from EV infrastructure, and what role local government has to play in encouraging buildouts. This was followed by a group discussion on how to apply these planning principles to urban and rural areas of GWRC.
- **9/20/22:** Endangered Fish Migration and Road-Stream Aquatic Organism Passage Design – Lisa Moss and Jessica Pica, US Fish and Wildlife Service (USFWS); and “VDOT Aquatic Organism Passage Permitting” – Daniel Redgate, Virginia Department of Transportation (VDOT).
 - Lisa Moss of the USFWS gave an overview of the problem with poorly-designed or unmaintained culverts and road-stream crossings and how it affects endangered and commercially important fish species in the GWRC region and beyond. Whereas dams are often thought of the main culprit in preventing fish spawning, culverts have an oversized role in preventing the passage of aquatic organisms. Lisa also provided lists of some available grants to help remedy the issue. Jessica Pica of USFWS gave a presentation on the crucial design elements and benefits of enhanced Aquatic Organism Passages (AOPs), and how to determine what AOPs may need upgrading. Daniel Redgate of VDOT then brought the discussion to the local planning level with a presentation and discussion of which regulations pertain to AOPs/road-stream crossings and how localities could collaborate with their regional VDOT offices to enhance these culverts.

Minutes and presentation materials from each REMTC meeting are posted on [GWRC's website](#).

C. Website Updates

GWRC has updated and maintained the “Environment” tab and its subpages on the website. [Coastal Zone Management](#) has its own page with information on the [REMTC](#) and the Environmental Strategic Plan. The tab also has a sub-page for [Native Plants](#) with information and a link to the Plant Central Rapp Natives website. The website was updated to include GWRC's DCR-approved [Resilience Plan](#) for submitting applications through DCR's Community Flood Preparedness Fund (CFPF). Minutes and presentation materials from each of the meetings are posted on [GWRC's website](#).

Product #2: Physical Features Special Project – Coastal Resource Toolbox

A. Project Summary

The purpose of this project is to create a resource for GWRC localities and other stakeholders comprised of land use ordinances and other instruments to provide for, protect, and restore coastal resources, habitats, and species. This can be in the form of information sharing and explanations of relevant regulations being produced by state entities and the rationale behind them, data and mapping tools, and links to grant applications and writing assistance. The strategies and tools are intended to overlap with efforts in other related programs, such as the Chesapeake Bay Watershed Implementation Plan (WIP) Phase III, Total Maximum Daily Load action plans, MS4 and unregulated stormwater activities, and local erosion and sediment control plans. This would culminate in a “toolbox” – an easily shared repertoire of tools and policies to address identified issues.

While many meetings of the Regional Environmental Managers Technical Committee have touched on these topics, and helped to grow a regional understanding of what information gaps exist and which strategies would be useful, certain meetings touched specifically on the toolbox. In coordination with the RRBC, GWRC localities participated in discussions on which ordinances and policies are important for handling stormwater on utility-scale solar sites. These discussions were driven largely by concerns in Caroline and Spotsylvania Counties, as well as burgeoning concerns in Stafford County. A short list of important policies and issues were reported back to the RRBC, including DEQ’s lack of staff for monitoring unregulated communities’ projects, limiting disturbance during construction to 100 acres, reserving industrial zoning for industrial uses, citizen concerns with viewsheds and rural character, decommissioning and recycling, and unintended consequences from designating panels impervious. The March 30, 2022 meeting notes are linked on the [RRBC website](#).

The group also discussed the regional need for a “toolbox” in light of the existing Environmental Services Strategic Plan, which lays out grant programs, possible projects and their statuses, and lists of funding mechanisms. Although it has been difficult to pinpoint tools that would enhance the day-to-day environmental planning and compliance activities of members of the regional resiliency group, consensus was reached around wanting more data on urban heat islands, a subject particularly concerning to Fredericksburg and which is part of ongoing studies by FOR and a consortium of higher education entities. This and other items will be further investigated and expanded in FY22 to help continue creating a repository of environmental planning knowledge that can help localities meet CZM goals.

A short list of toolbox items are posted on the [GWRC Regional Environmental Managers webpage](#). This list will be refined with additional information on urban heat islands and outcomes from ongoing RRBC discussions on utility-scale solar facility impacts.

Product #3: Benefits Accrued from Prior CZM Grants

The Virginia CZM Technical Assistant Grants have been an important part of GWRC's journey towards resiliency, especially in the past few years. While it is a PDC located more inland than several other coastal PDCs, GWRC has communities east and west of the Fall Line which can be impacted by tidal forces and whose tributaries feed into the Chesapeake Bay, simply determining what resiliency means to the region and how GWRC fits into the framework of coastal habitat protection has been invaluable. Conversations around these topics have led to positive impacts in energy, stormwater management, hazard mitigation, aquatic species habitat, and nutrient pollution reduction.

The Virginia CZM TA Grants have also produced several deliverables and outcomes that continue to serve the region, including the Plant Central Rappahannock Natives Campaign, the Environmental Services Strategic Plan, and discussions on Flood Risk Communication. In addition, Virginia CZM funds were used recently in securing a Building Resilient Infrastructure and Communities (BRIC) grant from the Federal Emergency Management Agency (FEMA), which was used to fund GWRC's 2022 Hazard Mitigation Plan Update.

A. Plant Central Rapp Natives Campaign

The Plant Central Rappahannock Natives Campaign is a group of regional stakeholders that have distributed educational material on the benefits of natives through their various organizations. Virginia CZM funds help GWRC continue to host the meetings in the GWRC office and to create and store program materials.

GWRC hosted the Plant Central Rapp Natives (PCRN) meeting on February 22, 2022 and the second semi-annual meeting on August 23, 2022. GWRC will host another PCRN meeting in February 2023. Native Plants has its own website page with information and a link to the Plant Central Rapp Natives website.

B. Environmental Services Strategic Plan

The Environmental Services Strategic Plan was a collaborative effort between GWRC, the member localities, and nonprofits and other stakeholders to delve into resiliency gaps and deficiencies, identify needs and wants, and develop goals and strategies to meet them over the next 10 years, with timelines and sources of funding identified, as well as a list of projects for each locality and their current status. This plan is meant to be a living document, and is revisited frequently in the monthly meetings of the REMTC, which is comprised of locality environmental staff, state agency staff, and nonprofits and other stakeholders in the region.

GWRC used the 2020 Environmental Services Strategic Plan to create scopes of work for the WIP 2022 and 2023 contracts and the Virginia CZM FY22 contract from October 2022 to September 2023. The 2020 Environmental Services Strategic Plan was instrumental in creating the GWRC Resilience Plan for DCR's CFPF. It will continue to serve as a base for future project prioritization.

C. Flood Risk Communications Plan

The purpose of the Flood Risk Communications Program is to engage local leaders, stakeholder groups, and citizens in awareness training using the FEMA [Flood Risk Communication Toolkit for Community Officials](#) to coincide with FEMA's updates to Flood Insurance Rate Maps in the region. The strategy is to

create tools and materials that localities can directly plug into their social media and other channels in order to inform citizens about flooding dangers and the existence of national flood insurance.

The first stakeholder meeting for this project was held in FY20, but due to a confluence of factors remained in the draft stage. The VCRMP and CFPF provided new perspectives that should be incorporated into the plan. In addition, HRPDC and DCR both gave presentations to the GWRC stakeholders describing their own flood risk plans, which brought to light numerous improvements that could be made to the original strategy.

At the 4/19/22 REMTC meeting, the Regional Resilience Stakeholder Group (formed as part of the FY20 Virginia CZM TA grant) discussed the methods, challenges and successes of communicating flood risk for each locality (especially during VA Flood Awareness Week) and the trajectory of the Flood Risk Communications Plan. The group concluded that while locality Public Information Officers generally have an adequate grasp on flood risk communications – using materials from DCR, FEMA, and others – annual reminders and some materials could be useful, especially around flood week. Not every locality had the capacity to create their own social media posts during that time. In addition, Stafford is a CRS community, and must demonstrate efforts to communicate flood risk to the public. Creating a central repository for flood risk information such as HRPDC’s getfloodfluent.org could be added to the GWRC regional project list.

Product #4: Resilience Planning

A. Regional Resiliency Coordination Outcomes

The Regional Resiliency Stakeholder Group consists of the GWRC REMTC, with the intent to educate the stakeholder group on resilience topics and resources as well as engage the workgroup to develop the other project deliverables. Whereas almost every meeting touches on resiliency topics important to the Stakeholder Group, GWRC hosted meetings with particular emphasis on advancing ecosystem and community resilience:

1. At the 12/15/21 meeting, DCR gave a presentation on environmental justice, which the group has had discussions on since.
2. The 3/15/22 meeting included discussions on renewable energy (solar) as it relates to resilience in the region, as well as environmental, policy, and permitting issues that arise with large renewable energy land uses.
3. On 5/17/22, FOR and The Berkley Group gave presentations on myriad resiliency grants applicable to the region and how GWRC could help apply, including: a large swath of transportation, energy, and infrastructure grants funded through the IIJA, National Fish and Wildlife Foundation (NFWF) grants, DCR’s CFPF, VDH’s Sewer and Well Assistance Program (SWAP), and other grant programs administered through DEQ, the Virginia Department of Forestry (DOF), and other state agencies.
4. The 7/19/22 meeting included an update on urban heat island data from two field sample days by FOR and discussion of GWRC’s Flood Risk Communication Plan, the REMTC toolbox, and efforts to prevent invasive species – part of Virginia CZM’s goals.

Minutes and presentation materials from each of the meetings are posted on [GWRC’s website](#).

B. Regional Resiliency Projects

GWRC has continued to work with the GWRC REMTC and other stakeholders to identify projects and other regional resiliency needs, such as data gaps, local capacity, etc. Current issues include weather and river level monitoring stations, mapping tools, and projects for grant funds such as FEMA grants and the upcoming IJA funds. The fourth round of funding for DCR's CFPF remains a priority opportunity.

C. CZM Resilience Database Contributions

GWRC is continuously engaging localities and stakeholders to determine which resiliency projects could be implemented in the region. GWRC has been participating in ongoing discussions with other Coastal PDCs and Virginia CZM staff about where the ultimate project database should be housed (the Wetlands Watch/Virginia CZM database on AdaptVA.org or, DCR's VRCMP Coastal Resilience Web Explorer). It has been determined by group collaboration of the Coastal PDCs and Virginia CZM staff that the Virginia CZM-hosted project database should be discontinued. It was recently affirmed (between the September 30, 2022 grant end date and the production of this final report) by DCR staff that the VCRMP database should be used. During the FY21 grant period GWRC has submitted 25 projects to this database, and has reviewed the projects in the Environmental Services Strategic Plan with the REMTC to determine what updates should be made to identified projects. Because of limited funding and locality capacity, the project list has not changed, but upon update of the VCRMP database GWRC staff will reenter or enter new projects as necessary. The existing projects are available to view at the [Virginia Coastal Resilience Master Plan Web Explorer Portal](#). For a formatted list of submitted projects, see Appendix A.

D. State Resilience Planning Support

GWRC has participated in the ongoing VCRMP process in an official capacity on the VCRMP TAC for discussions on Phase II of the Plan. GWRC staff attended and participated in several state and regional meetings on resilience topics, including several monthly RRBC meetings and REMTC meetings, the YRSCBR, APA legislative recaps, Wetlands Watch CRS Workgroup meetings, and many other virtual meetings with opportunities to participate. RRBC meeting notes can be found on their [website](#).

Appendix A: GWRC CZM/VCRMP Database Projects

County(s)	Project Name	Description	Purpose and Need	Total Cost
Stafford	Crow's Nest Peninsula and Estuary Conservation	This project focuses on NVCT's long-term goals of building out comprehensive estuarine land conservation in the vicinity of Crow's Nest peninsula in Stafford County, with a focus on lands surrounding the estuaries of Potomac Creek and Accokeek Creek. It involves ongoing and future targeted land conservation through easement and fee acquisitions that can allow for buffering of stream corridors, transition of habitats inland as sea levels rise, and avoidance of shoreline development in vulnerable areas. With adequate resources we would anticipate conserving up to an additional 8-10 high-priority properties over a five-year timeframe.	Tidal_Flooding, Storm_Surge_Flooding, Riverine_Flooding, Shoreline_Erosion	\$ 6,500,000
Stafford	Quantico to Aquia Creek Coastal Land Protection	This project focuses on permanent protection of natural lands in Stafford County along the shorelines of the Potomac River and Aquia Creek on the Widewater peninsula south of Marine Corps Base Quantico. It involves ongoing and future targeted land conservation through easement and fee acquisitions that can allow for transition of habitats inland as sea levels rise, prevention of coastal erosion, protection of critical infrastructure (i.e., railroad), and avoidance of shoreline development in vulnerable areas. With adequate resources we would anticipate conserving up to an additional 4-8 high-priority properties over a five-year timeframe.	Tidal_Flooding, Storm_Surge_Flooding, Riverine_Flooding, Shoreline_Erosion	\$ 5,000,000
Caroline, Spotsylvania	Plan for Bioretention Demonstration Sites	Bioretention Demonstration Sites at 6 Caroline County schools	Community Resilience, Ecosystem Resilience	NULL
All	GIS Development and Coordination	Establish uniform GIS standards for capabilities and data throughout the GWRC Region. Continue to improve regional inter-operable emergency communications and planning by coordinating and sharing GIS and other data. Encourage member localities to incorporate dam failure inundation mapping into local GIS systems to standardize and quantify the potential impacts of dam failure hazards	Community Resilience, Economic Resilience, Planning Capacity	\$ 100,000
All	Coordinate with Developers and Realtors	Engage, educate, and incorporate developers and realtors on sustainable and resilient development.	Community Resilience, Risk Awareness, Adaptation Options	\$ 100,000

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All	Floodplain Improvement Program development	Floodplain improvements through the development of a program for mitigation of priority flood-prone structures through the promotion of acquisition/demolition, elevation, flood proofing, minor localized flood control projects, mitigation reconstruction. In addition, create and prioritize an inventory of flood-prone structures.	Community Resilience, Planning Capacity	\$ 50,000
All	Rappahannock River Plan	Install living shorelines, acquire land for public access and stormwater management, remove and replace revetments, grading the bank if possible, and include vegetation buffers, and develop shoreline enhancement projects (include sand beach/dune and vegetated wetlands). In addition, Caroline County is interested in streambank restoration to prevent further land erosion and to develop habitat restoration.	Community Resilience, Ecosystem Resilience, Adaptation Options, Planning Capacity	\$ 50,000
All	Potomac River Plan	Acquire land for public access, green stormwater management, and shoreline construction, includes Wayside Park shoreline stabilization expansion/buffering protection of the Crow's Nest Peninsula	Community Resilience, Ecosystem Resilience, Adaptation Options	\$ 5,000
All	Mattaponi River Plan	Mattaponi River Project for IP, Riparian Forest Buffer Restoration	Community Resilience, Ecosystem Resilience, Adaptation Options, Planning Capacity	\$ 50,000
All	Port Royal Main Street Plan	Improving Main Street drainage systems; currently planning and seeking funding for collaborative action to correct existing problems of pollution resulting from ditches along Route 301 (Main St.), which carry stormwater runoff and leachate from septic fields directly to the Rappahannock River.	Community Resilience, Risk Awareness, Adaptation Options	\$ 10,000
All	Septic System Management Program	Develop a septic system program management program for all localities within the GWRC Region.	Community Resilience, Ecosystem Resilience, Risk Awareness, Planning Capacity	\$ 20,000
All	Sewer and Water Connection Plan	Conducting studies and developing a plan for sewer and water connection	Community Resilience, Planning Capacity	\$ 25,000
All	Study of Pavement Removal Options on City Property	Study of Pavement Removal Options on City Property	Ecosystem Resilience, Adaptation Options, Planning Capacity	\$ 8,000
All	Assess resilience of drinking water supply and wastewater management systems	Assess resilience of drinking water supply and wastewater management systems	Community Resilience, Economic Resilience, Ecosystem Resilience, Risk Awareness	\$ 50,000
All	Creation of local resilience policy 'toolkit' for GWRC	Creation of local resilience policy 'toolkit'	Community Resilience, Economic Resilience, Risk Awareness,	\$ 15,000

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			Adaptation Options, Planning Capacity, Funding Capacity	
All	Plan for Bioretention Demonstration Sites	Bioretention Demonstration Sites at Frederickburg schools	Community Resilience, Ecosystem Resilience	\$ 20,000
All	Plan for Bioretention Demonstration Sites	Bioretention Demonstration Sites at 4 King George schools	Community Resilience, Ecosystem Resilience	NULL
All	Plan for Bioretention Demonstration Sites	Bioretention Demonstration Sites at several Spotsylvania County facilities	Community Resilience, Ecosystem Resilience	NULL
All	Investigate emergency lane/shoulder improvements In GWRC	Investigate emergency lane/shoulder improvements for Emergency Services access on all primary roads.	Community Resilience, Economic Resilience, Risk Awareness	\$ 15,000
All	Identify and publicize local evacuation routes throughout the region.	Identify and publicize local evacuation routes throughout the George Washington Region	Community Resilience, Economic Resilience, Risk Awareness	\$ 15,000
All	Natural Hazard Public Outreach for the George Washington Region	Develop a regional preparedness guide focusing on natural hazards to disseminate to the public.	Community Resilience	NULL
All	Create a Citizen Coastal Resiliency Advisory Committee (CCRAC)	Create a Citizen Coastal Resiliency Advisory Committee (CCRAC) that is representative of the communities being served to provide a lens of equity and community engagement within the resilience decision-making process.	Community Resilience, Economic Resilience, Risk Awareness, Adaptation Options, Planning Capacity	\$ 20,000
All	Study to Identify GWRC's "Front-Line" Communities.	Using environmental, social, and economic variables to identify disproportionately at-risk (otherwise known as "front line"☒) communities that need further assistance against coastal flooding and natural hazards.	Community Resilience, Economic Resilience, Ecosystem Resilience, Risk Awareness, Planning Capacity	NULL
All	GWRC Equity Training	Equity training for locality and regional staff members.	Planning Capacity	NULL
Stafford	Plan for Bioretention Demonstration Sites	Bioretention Demonstration Sites at Stafford County facilities	Community Resilience, Ecosystem Resilience	NULL

Total = \$12,053,000