

# Hampton Roads Coastal Resources Management Technical Assistance Program Fiscal Year 2020-2021 Final Report

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**HAMPTON ROADS COASTAL RESOURCES MANAGEMENT  
TECHNICAL ASSISTANCE PROGRAM  
FISCAL YEAR 2020-2021**

**Final Report**

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This project was included in the Hampton Roads Planning District Commission Unified Planning Work Program for FY21, approved by the Commission on May 21, 2020, and in the HRPDC FY 2022 Work Program, approved by the Commission on May 20, 2021.

Prepared by the staff of the Hampton Roads Planning District Commission



**November 2021**

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**ABSTRACT**

This report describes the environmental technical assistance program conducted by the Hampton Roads Planning District Commission during FY 2020 – 2021 through its Coastal Resources Management Program. This program encompasses environmental impact review, participation in state and federal programs, coordination of regional programs addressing environmental issues, public information and education, and technical assistance to Hampton Roads localities. It contains representative examples of the technical work, comment letters, outreach materials, and associated materials generated and used in assisting the region's seventeen local governments, supporting the Virginia Coastal Zone Management Program, and working with the other Planning District Commissions in the Coastal Zone.

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## Introduction

In February 2020, the Hampton Roads Planning District Commission (HRPDC) submitted a proposal to the Virginia Coastal Zone Management Program (CZM) for funding to continue the HRPDC's Technical Assistance Program. Through this program, the HRPDC provides technical assistance on a variety of environmental and coastal resources management issues to its seventeen member local governments and to coordinate their response to those issues.<sup>1</sup> It also provides assistance to the incorporated towns in the region as well as to a wide variety of non-governmental stakeholders, including academic institutions and for-profit and not-for-profit entities. This program has operated successfully with financial assistance from CZM since the latter's inception in 1986. In October 2020, HRPDC was awarded financial assistance to maintain its Technical Assistance Program through September 2021. This report provides an overview of the activities and accomplishments of the Hampton Roads Coastal Resources Technical Assistance Program during that period.

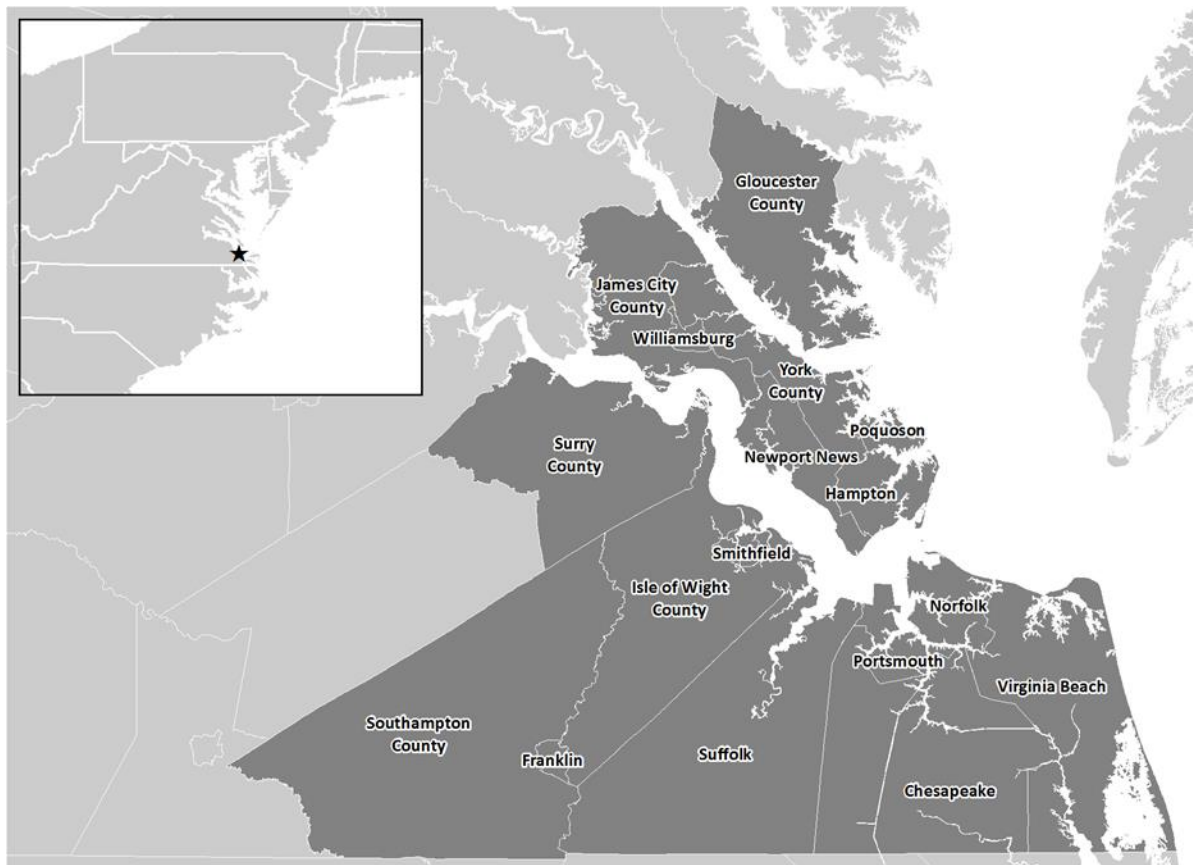
The Hampton Roads Technical Assistance Program is a comprehensive program, providing on-call staff capacity, a regional coordination mechanism, and technical analysis and research capabilities. It assists the region's localities on local issues in a timely manner, ensures a collective response to regional, state and federal issues as they arise, and facilitates cooperation and coordination among the localities. The Technical Assistance Program provides the resources to begin many efforts which are later funded through specific grants or local assessments. In other cases, the program allows for the continuation of efforts after initial funding. Examples of these programs include the HRPDC's work on the Chesapeake Bay Program and green infrastructure. In several cases, CZM funding for this program has provided seed money allowing the region to undertake new environmental initiatives, such as the Regional Water Supply, Groundwater, Wastewater, Stormwater Management, and Coastal Resiliency Programs, including the public information and education components of each. These regional initiatives, which continue to evolve, are now institutionalized and have been enhanced through dedicated local funding. These regional programs are unique examples of intergovernmental cooperation to promote responsible use and management of coastal resources in the Commonwealth.

The Hampton Roads Technical Assistance Program also enables the HRPDC to participate in and support key elements of the CZM program, such as the environmental impact review and federal consistency determination process, wetlands and dune regulations, Chesapeake Bay Preservation Area Designation and Management regulations, air quality regulations, and several state water quality programs. This participation results in cost savings to the state by educating localities collectively about state and federal initiatives and coordinating local government input to these efforts. Over the past thirty-five (35) years, several hundred local government staff members from the region's seventeen local governments have received technical training in wetlands regulations and delineation, Chesapeake Bay Preservation

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<sup>1</sup> The Hampton Roads Planning District Commission consists of the Cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, and Williamsburg, the Counties of Gloucester, Isle of Wight, James City, Southampton, Surry, and York, and the Town of Smithfield.

Act (CBPA) implementation, erosion and sediment control, stormwater management, low impact development, environmental site design, floodplain management, geographic information systems, land conservation, land use planning, coastal resiliency, green infrastructure, watershed management, and comprehensive coastal resources management. Local government board members, staff from other PDCs, and representatives of the private sector have also participated. As a result, the capacity of the region to address these issues has increased.



**Figure 1: Map of Local Government Members of the Hampton Roads Planning District Commission**

Through review of environmental impact documents and coastal zone federal consistency determinations, the regional coastal resources management program has also facilitated rapid resolution of local government concerns with the impacts of state projects proposed by the Virginia Department of Transportation (VDOT), the Virginia Community College System, state supported colleges and universities, and others, as well as federal projects such as federally funded or assisted construction projects, harbor dredging, military facility construction and operations, military-civilian encroachment issues, offshore energy and resource planning, and related resource management programs.

The Technical Assistance Program allows the HRPDC to serve as a central source of environmental data and information, including water and wastewater data, soil surveys, historic aerial photographs, and regional land use data. HRPDC also houses and collects a wide variety of GIS datasets from various federal, state, and local partners, such as U.S. Census data, high-resolution elevation data, and land



cover data, as well as datasets developed by HRPDC and Hampton Roads Transportation Planning Organization (HRTPO) staff. Many of these data resources and related applications are housed on the HRPDC's regional GIS data portal, [www.HRGEO.org](http://www.HRGEO.org), which was launched in 2018.

The FY 2020 – 2021 Hampton Roads Technical Assistance Program enabled the region's localities to continue to address, in a comprehensive and integrated fashion, many aspects of coastal resources management - Chesapeake Bay issues, environmental impact review, local land use and comprehensive planning, alternative energy development, wetlands protection, shoreline management, coastal resiliency, public access, and GIS data analysis. The program has allowed the continuation of regional support for and participation in CZM activities, regional participation in other state and federal initiatives, completion of necessary technical studies, technical assistance to the region's localities, and conduct of public information and education activities.

## Program Objectives

The Hampton Roads Technical Assistance Program has six (6) primary objectives. These overall objectives, while expanded in scope, have remained largely the same since program inception. They are:

- 1) To assist Hampton Roads localities in implementing CZM recommendations, related state and federal environmental management programs, and related state legislation and regulations.
- 2) To support the Commonwealth of Virginia in implementing the CZM Program through coordination of local and regional review of environmental impact assessments/statements and applications for state and federal environmental permits and related environmental documents and by serving as an information conduit between the state and localities on coastal resource management issues.
- 3) To complete regional environmental studies, necessary to support local government consideration of state and federal priorities.
- 4) To enable the Hampton Roads region to continue to play an active role in the development, implementation and refinement of the CZM Program, the Chesapeake Bay Program, and related environmental initiatives.
- 5) To improve the coordination and quality of local and regional decision-making concerning coastal and related environmental resources.
- 6) To increase public awareness of the value of coastal resources and of the local and regional efforts to manage them.

To accomplish these objectives, a comprehensive program was structured involving a range of activities in the following categories: regional coordination, environmental impact review, public information and education, training, regional technical studies, and technical assistance.

## **Program Accomplishments**

### **Regional Coordination (Product #3)**

The regional coordination component of the HRPDC's Coastal Resources Management Technical Assistance Program includes the facilitation of meetings between the area's local governments and other organizations as well as participation in state and federal programs. Through the regional coordination process, the HRPDC works to ensure that local government planning and implementation activities in the areas of stormwater management, water supply and groundwater management, wastewater, Chesapeake Bay, sea level rise, resiliency, and coastal zone management are coordinated and mutually supportive. This coordination process provides opportunities for local government innovation and enhancement of activities in each of these areas.

### **Regional Coordination Process**

The Hampton Roads Technical Assistance Program enables the HRPDC to maintain a regional coordination process on environmental issues while also providing links to other ongoing regional environmental programs. Through the Regional Environmental Committee, HRPDC staff support local governments in implementing legal requirements of various state and federal regulatory programs. This process also helps the region by providing support for coastal resources management and environmental education. The Regional Environmental Committee meets approximately ten to twelve times per year. The Hampton Roads Technical Assistance Program also enables the HRPDC staff to support regional coordination on issues related to coastal resiliency, sea level rise, recurrent flooding, and climate change adaptation. These issues fall under the purview of the HRPDC's Coastal Resiliency Committee. The Coastal Resiliency Committee meets on a quarterly schedule, with additional workgroup discussions of technical matters scheduled for off-months when necessary. Additional information on these efforts is described in a later section of this report.

During this grant year, the HRPDC staff continued local government coordination of ongoing consideration of various environmental issues. Stormwater management, the Chesapeake Bay Program and Total Maximum Daily Load (TMDL), renewable energy, and flooding continue to be issues of considerable interest. The meetings usually include presentations by HRPDC staff, local committee members, or state agency representatives and often include discussion of potential project ideas or responses to regulatory developments. Each meeting also closes with an opportunity for regional and local staff to provide status reports or ask questions on issues relevant to the committee. Full agendas and related materials, including presentations, for these and all HRPDC public meetings are available on the HRPDC website, [www.hrpdcva.gov](http://www.hrpdcva.gov).

### **Regional Environmental Committee**

The following meeting summaries describe the discussions of the HRPDC Regional Environmental Committee during the past year. During this grant year the Regional Environmental Committee met ten (10) times. Meetings were held virtually via the WebEx platform due to COVID-19.

**Meeting Date:** October 1, 2020

**Summary:** The primary focus of this meeting was on Norfolk's recently adopted zoning ordinance. The meeting included staff presentations on developments from the General Assembly's 2020 Special Session, a report on recommendations for revising state codes related to tree preservation, highlights from askHRgreen.org's FY20 program, and updates on regional and state coastal resilience efforts.

**Outcome(s):** Outcomes of this meeting included increased knowledge of innovative zoning practices related to resiliency, adaptive reuse, and landscaping requirements.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1121/regional-environmental-committee/>

**Total Attendance:** 52

**Total Stakeholders:** 29

**Meeting Date:** November 5, 2020

**Summary:** The primary focus of this meeting was shoreline management. The main presentation from this meeting was from the James River Association on their Living Shoreline Collaborative and cost-share program. The meeting also included a presentation from Chesapeake on waste prevention and recycling at its award-winning city garage and a briefing from the Virginia Coastal Policy Center on a NOAA Project of Special Merit effort for CBPA guidance. The meeting also included presentations from the HRPDC staff on developments to the Virginia Marine Resources Commission (VMRC)'s wetlands guidelines and the Hampton Roads Sanitation District (HRSD)'s Sustainable Water Initiative for Tomorrow (SWIFT) project.

**Outcome(s):** Outcomes of this meeting included increased awareness of under-development wetlands guidelines and resources for living shoreline implementation.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1122/regional-environmental-committee/>

**Total Attendance:** 56

**Total Stakeholders:** 27

**Meeting Date:** December 3, 2020

**Summary:** The primary focus of this meeting was air quality. This meeting featured a presentation from Chuck Turner, DEQ Manager of Air Quality Monitoring, on the agency's Tidewater Air Monitoring Evaluation Project. The meeting also included a presentation from Chesapeake Bay National Estuarine Research Reserve (CBNERR) staff on the York River and Small Coastal Basins Roundtable and updates from the HRPDC staff on the Virginia Coastal Resilience Master Plan (VCRMP) and the Virginia Bay Enhancement Working Group (BEWG) effort.

**Outcome(s):** Outcomes of this meeting included increased awareness of air quality monitoring in Hampton Roads and several other coordination efforts ongoing in the region.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1123/regional-environmental-committee/>

**Total Attendance:** 63

**Total Stakeholders:** 33

**Meeting Date:** January 7, 2021

**Summary:** The primary focus of this meeting was resiliency. The meeting featured a presentation from Ms. Jess Kraus, William & Mary Law School, on recent changes to Virginia's commercial property-assessed clean energy (C-PACE) law to allow for funding of flood mitigation and stormwater management. The meeting also included a briefing from the Hampton Roads Transportation Planning Organization (HRTPO) on regional trails and updates from the HRPDC staff on amendments to the Chesapeake Bay Preservation Area Designation and Management Regulations and the 2021 General Assembly session.

**Outcome(s):** Outcomes of this meeting included increased knowledge of C-PACE as a resiliency tool and awareness of pending changes to the CBPA regulations.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1124/regional-environmental-committee/>

**Total Attendance:** 70

**Total Stakeholders:** 31

**Meeting Date:** February 4, 2021

**Summary:** The primary focus of this meeting was resilient communities. The meeting included a presentation Ms. Amanda Clayton, NASA, on the agency's DEVELOP program that assigns students and recent graduates to projects providing decision-support tools to communities on a variety of issues. The meeting also featured a presentation from Mr. Darryl Cook, James City County, on the county's efforts to become a Class 5 community in the Community Rating System (CRS). The meeting also included updates from the HRPDC staff on the askHRgreen.org program, 2021 General Assembly legislative session, and proposed amendments to the Chesapeake Bay Preservation Area Designation and Management Regulations.

**Outcome(s):** Outcomes of this meeting included increased understanding of floodplain management best practices and awareness of potential changes to the Chesapeake Bay Preservation Area Designation and Management Regulations.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1125/regional-environmental-committee/>

**Total Attendance:** 59

**Total Stakeholders:** 30

**Meeting Date:** March 4, 2021

**Summary:** The primary focus of this meeting was water quality. The meeting featured a presentation from Mr. Joe Rieger, Elizabeth River Project, on the organization's annual State of the River Scorecard, which gave the entire river an overall grade of "C." The meeting also included a presentation from Mr. Joe Wood, Chesapeake Bay Program, on accounting for fiscal stress in grant awards from the Stormwater Local Assistance Fund. The meeting also included updates from the HRPDC staff on land use/land cover data from the Chesapeake Bay Program, the 2021 General Assembly legislative session, and proposed amendments to the Chesapeake Bay Preservation Area Designation and Management Regulations.

**Outcome(s):** Outcomes of this meeting included identification of potential regional comments on the proposed amendments to the Chesapeake Bay Preservation Area Designation and Management Regulations and consensus on initial regional comments for proposed wetlands guidelines from VMRC.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1239/regional-environmental-committee/>

**Total Attendance:** 71

**Total Stakeholders:** 29

**Meeting Date:** April 1, 2021

**Summary:** The primary focus of this meeting was resilience. The meeting featured a presentation from Dr. Molly Mitchell, Virginia Institute of Marine Science (VIMS), on community climate outlooks, a tool developed by the Mid-Atlantic Regional Integrated Sciences and Assessment Program to help localities understand their climate risks. The meeting also featured a presentation from Dr. Alexandra Sutton Lawrence, Great Dismal Swamp Stakeholder Collaborative, on the group's efforts to designate the Great Dismal Swamp as a National Heritage Area. The meeting also included briefings from the HRPDC staff on the 2021 Environment Virginia Symposium, draft revised wetlands guidelines from VMRC, and proposed amendments to the Chesapeake Bay Preservation Area Designation and Management Regulations.

**Outcome(s):** Outcomes of this meeting included discussion of potential comments on the draft wetlands guidelines and consensus on regional comments on the proposed amendments to the Chesapeake Bay Preservation Area Designation and Management Area Regulations.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1240/regional-environmental-committee/>

**Total Attendance:** 70

**Total Stakeholders:** 37

**Meeting Date:** May 6, 2021

**Summary:** The primary focus of this meeting was water quality. The meeting featured a presentation from Mr. Fred Wilkins, Fairfax County, on a stormwater management BMP that recently won an award from the Chesapeake Stormwater Network. The meeting also included a presentation from Mr. Matt Smith, Hampton Roads Alliance, on developments with offshore wind. The meeting also included updates from the HRPDC staff on solar energy development, flood insurance outreach, and the Community Flood Preparedness Fund (CFPF).

**Outcome(s):** Outcomes of this meeting included increased knowledge of stormwater management BMPs and offshore wind development. The meeting also helped develop regional comments on the draft grant manual for the CFPF.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1241/regional-environmental-committee/>

**Total Attendance:** 60

**Total Stakeholders:** 32

**Meeting Date:** June 3, 2021

**Summary:** The primary focus of this meeting was wastewater management. The meeting featured a presentation from Mr. Ted Henifin, HRSD General Manager, on recent developments with the Hampton Roads Sanitation District, including working through COVID-19 and other challenges, continued implementation of the SWIFT project to inject treated wastewater into deep aquifers, and tracking bacteria and pathogens using wastewater treatment facilities. The meeting also featured a presentation from Mr. Joe Lerch, Virginia Association of Counties, on utility-scale solar legislative and regulatory developments. The meeting also included updates on askHRgreen.org, CBPA regulatory amendments, and wetlands guidelines.

**Outcome(s):** Outcomes of this meeting included increased awareness of the regional wastewater authority and knowledge of policy developments related to solar energy, the CBPA, and tidal wetlands.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1302/regional-environmental-committee/>

**Total Attendance:** 56

**Total Stakeholders:** 30

**Meeting Date:** September 2, 2021

**Summary:** The primary focus of this meeting was on solar energy development. The meeting featured a presentation from Ms. Erin Belt, DEQ, on the stormwater management plan review process for solar projects. The meeting also included a presentation from Ms. Laura McKay (CZM), and Ms. Katie Register Clean Virginia Waterways on the Virginia Marine Debris Reduction Plan and a presentation from Mr. Trevor Long James City County on a living shoreline stabilization project at Chickahominy Riverfront Park. The meeting also included briefings from the HRPDC staff on FEMA's Risk Rating 2.0 methodology for calculating stormwater premiums and updates to the CBPA regulations.

**Outcome(s):** Outcomes of this meeting included increased awareness of stormwater issues with solar energy projects, marine debris, and pending changes to the national flood insurance program and CBPA regulations.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1305/regional-environmental-committee/>

**Total Attendance:** 60

**Total Stakeholders:** 27

### **Participation in State and Federal Programs**

Several state and federal environmental programs encourage use of PDCs as a cost-effective mechanism for informing local governments and seeking their input for state and federal program development and accomplishment. For example, the Chesapeake Bay Program in both its 1996 and 2002 Local Government Participation Action Plans recommended better use of technical assistance providers, such as PDCs, to serve as vehicles to distribute information and outreach on Chesapeake Bay-related issues. It also suggested development of a network of local officials and staff with expertise in dealing with resource protection issues. Virginia's Regional Cooperation Act strongly recommends this type of role for PDCs. Several programs, including CZM as well as state agencies such as the Departments of Conservation and Recreation, Emergency Management, and Environmental Quality, use the PDCs in this manner. Historically, NOAA's Section 312 evaluation of Virginia's CZM Program has recognized the benefits and cost-effectiveness of the network of PDCs in supporting CZM and in assisting their member local governments.

In the Hampton Roads region, the Hampton Roads Technical Assistance Program and its associated committees help provide this function. Both HRPDC staff and local government members of the HRPDC Advisory Committees (including the Regional Environmental Committee, Directors of Utilities Committee, and Coastal Resiliency Committee) frequently serve on state and federal advisory groups. On a regular basis, the participating localities request that the HRPDC staff serve as their representative to these advisory groups. Alternatively, the Committees may recommend a local government member to represent the region. In both cases, the HRPDC Committees provide all seventeen member localities with a mechanism to participate, at least indirectly, in many state or federal programs and efforts. Also, data and information on Hampton Roads conditions are provided by the Hampton Roads representative (HRPDC or local government staff) to state and federal agencies on behalf of the localities, thus minimizing state and federal agency data collection and input costs. During FY 2020-2021, this program

included regional participation in state or federal programs addressing water quality, resiliency, stormwater management, groundwater, and the Chesapeake Bay Program.

The HRPDC staff works closely with state and federal agencies on coordination of programs as they affect the Hampton Roads region. This work involves follow-up to previous studies conducted by the HRPDC with CZM funding, serving on advisory committees supporting plan and regulatory development, and development of new cooperative initiatives involving state, local, federal and private entities. During the past year, this included participating on the habitat restoration committee for the York River-Small Coastal Basins Roundtable, the stakeholder advisory group for proposed amendments to the Chesapeake Bay Preservation Area Designation and Management Regulations, the VCRMP Technical Advisory Committee, the BEWG, the steering committee for the Lower Chickahominy Watershed Collaborative, and others.

### **Virginia Coastal Zone Management Program**

During the grant period, the HRPDC staff continued to participate in Coastal Zone PDC meetings, contributing to the ongoing refinement of the CZM Program. The HRPDC staff participated in two Coastal Policy Team meetings on January 28, 2021, and September 16, 2021. The HRPDC staff also participated in Coastal PDC meetings on December 18, 2020 (hosted by Northern Virginia Regional Commission), March 30, 2021 (hosted by PlanRVA), and June 4, 2021 (hosted by Accomack-Northampton Planning District Commission).

The Coastal PDCs provide a network linking all regional agencies and localities in the Coastal Zone to address environmental issues. In recent years this network has provided support for multi-regional partnerships and initiatives, including coastal resilience, ecotourism, working waterfronts, and planning for the Lower Chickahominy River Watershed. The HRPDC staff has played an integral role in the development and enhancement of these larger networks as well. During the past year, HRPDC staff supported PlanRVA's Lower Chickahominy Watershed Partnership project by participating on the planning/steering committee.

### **Chesapeake Bay Program**

The Hampton Roads Technical Assistance Program continues to support the HRPDC's participation, on behalf of its member localities, in the Chesapeake Bay Program. Beginning in FY 1998-1999, this element of the Program received greatly increased emphasis through several initiatives, including the renewal of the Chesapeake Bay Local Government Advisory Committee, establishment of a Metropolitan Areas Work Group, development of the Chesapeake Bay Agreement 2000 and development of new and revised Chesapeake Bay Program Implementation Strategies. The Commission's involvement with the Chesapeake Bay Program continued with the development of the Tributary Strategies and the Chesapeake Bay Watershed Model. Implementation of the Chesapeake Bay TMDL and aiding localities in complying with stormwater management permit requirements continue to be a major focus of HRPDC's environmental work.



In addition, both HRPDC and Hampton Roads local government staff maintain involvement on various federal and state advisory and regulatory committees. While this participation is often funded by other programs, the HRPDC provides a forum, through the Regional Environmental Committee and Coastal Resiliency Committee, for those representatives to gather information and responses from other local governments in the region, and to convey information from these advisory groups back to the region. The HRPDC staff currently participates in the Chesapeake Bay Program's Water Quality Goal Implementation Team and Climate Resiliency Workgroup, attending in-person meetings when possible and otherwise participating in conference calls. Since March 2020, these meetings have been held as virtual video conferences and conference calls due to the COVID-19 pandemic.

### **Environmental Impact Review (Product #1)**

The HRPDC staff reviews and comments on applications for state and federal regulatory permits, including the associated Environmental Impact Assessments/Statements or federal consistency determinations. Local staff representatives are regularly contacted to identify any concerns individual local governments may have with specific projects. On occasion, the Hampton Roads Planning District Commission may be informed on particular projects with significant regional or local impacts. Generally, no formal action is taken by the Commission as a result of this notification; however, historically, the Commission has requested more extensive HRPDC staff and local government review of particular issues. HRPDC staff reviews requests for comments from DEQ and responds as appropriate. From October 1, 2020, through September 30, 2021, the HRPDC staff provided comments on one (1) environmental impact review and provided comments on one (1) transportation study. The specific projects are listed below. The HRPDC, in cooperation with the localities, worked to ensure that these projects were coordinated with and met local government requirements. HRPDC's responses are combined with any others from state agencies when DEQ makes its final determinations. While these determinations (and the collected comments) are conveyed back to HRPDC, DEQ staff does not generally identify any specific impacts to projects based on HRPDC staff comments. However, in several cases DEQ staff or staff from other state agencies have followed up with HRPDC staff to have comments clarified.

- 1) DEQ #21-085F – ACOE Lyon Shipyard Travel Lift System
- 2) Bowers Hill / I-664 project- Draft Indirect and Cumulative Effects Technical Report

Coordination of review and comment on environmental documents with the region's localities is frequently problematic, because of time constraints placed on the review process by the state and, in some cases, by project applicants who request expedited review from the state. In addition, projects are often submitted for environmental impact review before designs are complete. Localities often wait for permit applications, which require complete designs and plans, prior to review.

## **Regional Special Projects, Technical Studies and Local Assistance (Product #4)**

The HRPDC staff regularly coordinates with local and regional partners to identify timely and appropriate special projects or technical studies that address important regional issues. The HRPDC staff and regional advisory committees identify potential topics for special projects or technical studies during the grant application process, but often there are important issues that arise during the grant year, and this grant allows HRPDC staff to respond to those needs as they occur. During FY 2020-2021, the HRPDC staff identified and completed four such projects: a flood history and insurance claim dashboard; recommendations for climate-informed precipitation design storms; a storymap on first floor elevations, and expansion of the Get Flood Fluent website. These initiatives are described below.

### **Virginia Flood Events and NFIP Insurance Claims Dashboard**

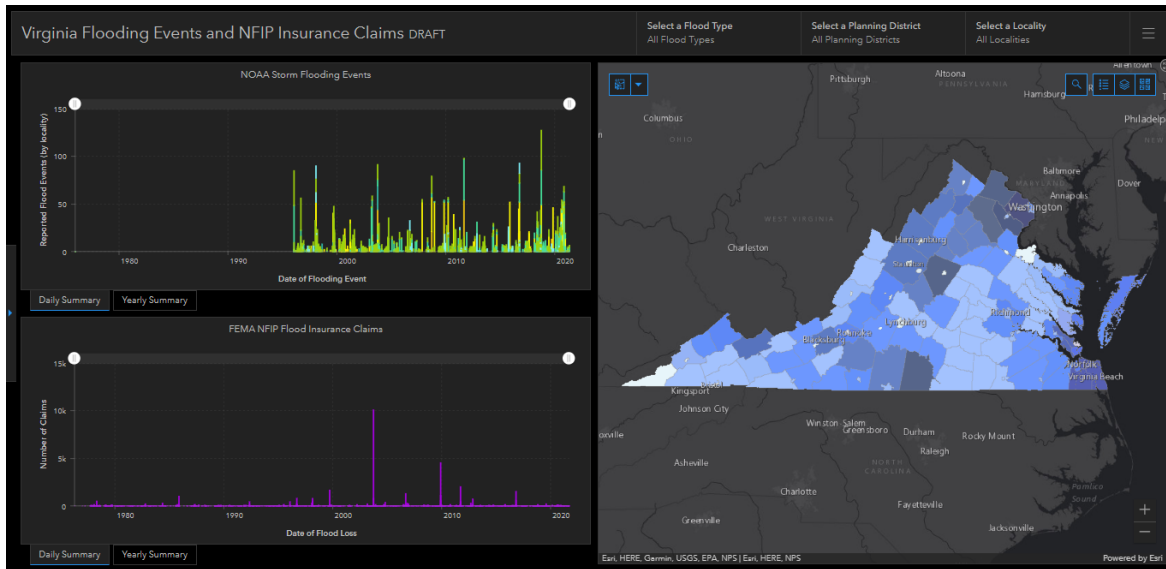
Conveying information about the frequency and extent of flooding is an important part of the HRPDC's efforts to build support for resilient public policies and adaptation strategies and to communicate flood risk to residents, property owners, decision-makers, and other stakeholders. Accurate, high-resolution historical flooding data does not exist for Hampton Roads, so the HRPDC has sought out other datasets to help fill in this information gap. During this grant year, the HRPDC staff identified two complementary datasets that could be combined to give users an understanding of how floods have affected Virginia over time.

To better understand trends in historical flood frequency across Virginia, HRPDC staff created an ArcGIS Online dashboard viewer that summarizes reported flooding events and flood insurance claims at the locality scale. Records of reported flooding events across Virginia were obtained using the NOAA Storm Events Database (available at <https://www.ncdc.noaa.gov/stormevents/>). The following event types focused on flooding were selected: Coastal Flood, Flash Flood, Flood, Heavy Rain, Hurricane, and Tropical Storm. Locality summaries of the total number of events per flood type and the number of days with flooding reported, ranging from January 1996 to May 2021, were produced in GIS.

The flood insurance claims data was obtained through the OpenFEMA data portal (available at <https://www.fema.gov/openfema-data-page/fima-nfip-redacted-claims-v1>). FEMA's Federal Insurance and Mitigation Administration (FIMA)'s National Flood Insurance Program (NFIP) Redacted Claims data set represents more than 2,000,000 claims transactions across the country. To identify claims specific to Virginia, Python code was used to access the data API endpoint and apply a filter specific to Virginia. Technical support in developing the code was provided by OpenFEMA support staff. HRPDC staff developed a Python script in ArcGIS Notebooks within ArcGIS Pro to summarize the claims data at the locality scale by unique dates. For work during this grant year, the FEMA claims dataset was last updated on September 13, 2021. It includes claims ranging from April 1976 through August 2021 for Virginia.

The resulting dashboard viewer includes an interactive map and graphs to explore flooding event and flooding claims data. The user can toggle between two choropleth maps which display total number of days with flooding reported and total number of flood insurance claims for each locality. By clicking on a locality polygon, the user can access the total number of claims and total flooding days for each of the

six flood event types. Map filters for individual localities and planning district commission can be applied. Summary bar charts display the total number of claims and number of floods by event type per day. This allows the user to compare trends in flood insurance claims and flooding events over time. Graphs can be filtered to more specific date ranges, as well as by locality, planning district, and flood event type. Users also have the option to toggle between daily and yearly summaries (see Figure 2).



**Figure 2: Screenshot of the draft ArcGIS flooding events and insurance claims online dashboard**

Given that the FEMA claims data and NOAA storm databases are regularly updated, HRPDC staff plan to establish a long-term maintenance plan for the dashboard data that would include updates at a given frequency, such as quarterly or bi-annually. The dashboard will be published on HRGEO.org later this fall, and HRPDC staff are currently exploring developing a mobile-response version through ArcGIS Online Experience builder.

### **Climate-Informed Precipitation Design Storms**

To be useful, regulations such as precipitation design storms must be based on sound data and analysis. Typically, design rainfall depths and associated intensity-duration-frequency curves are based on NOAA’s Atlas 14 Precipitation-Frequency Atlas for the United States, which is published in a series of volumes covering various subareas of the United States. Virginia is included in Volume 2, which covers the states in and around the Ohio River basin. Volume 2 was last published in 2004 and revised in 2006. It only includes data through 2000, so does not account for observed changes in precipitation patterns since then, nor does it account for future climate change. As a result, it is becoming less useful over time as underlying climate conditions change. For this effort, the HRPDC staff developed two sets of potential new design rainfall depths based on work conducted by the City of Virginia Beach and by the RAND Corporation and the Mid-Atlantic Regional Integrated Sciences and Assessments (MARISA) program on behalf of the Chesapeake Bay Program.

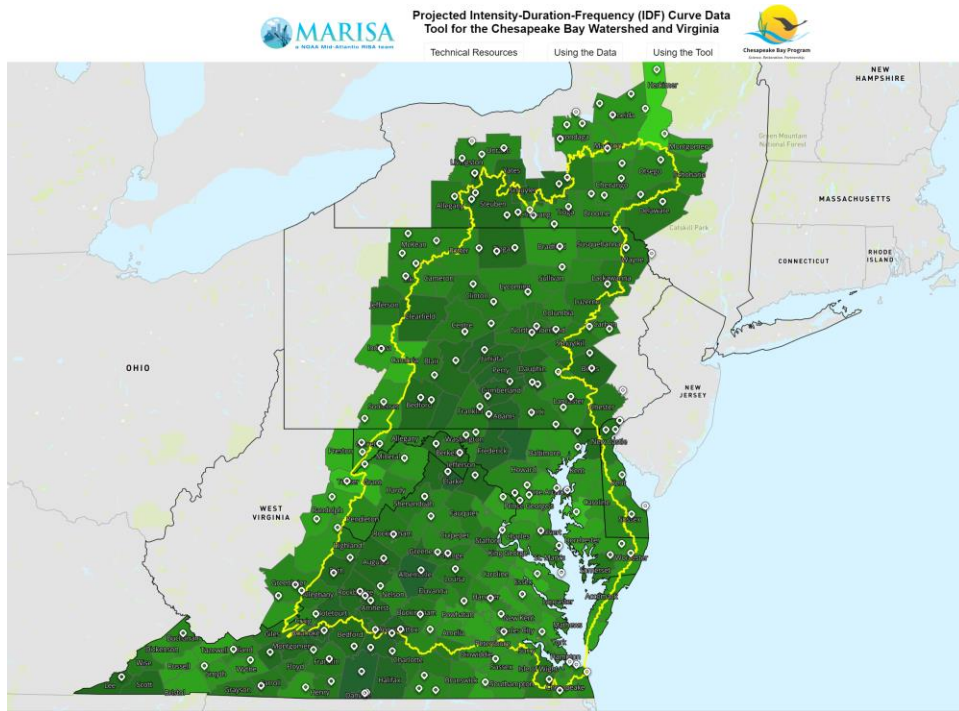
The primary deliverable from the RAND study was the development of change factors for individual counties and county-equivalent units (e.g., independent cities in Virginia) in the Chesapeake Bay watershed and all of Virginia (Figure 5). Change factors are multipliers applied to values from the current NOAA Atlas 14 volume to generate estimates that correspond to future climate conditions.

$$\text{Future Precipitation} = \text{NOAA Atlas 14 Precipitation} \times \text{Change Factor}$$

Change factors were developed for different combinations of climate scenarios, time periods, and recurrence intervals. For example, a change factor would be calculated for the 2-year recurrence interval for 2020-2069 under representative concentration pathway 4.5.

- Climate scenarios: representative concentration pathways (RCPs) 4.5 and 8.5<sup>2</sup>
- Time periods: 2020-2069 and 2050-2099 (baseline time period is 1950-2000)
- Recurrence intervals: 2-year, 5-year, 10-year, 25-year, 50-year, and 100-year

To account for uncertainty, the RAND/MARISA team calculated multiple values for each factor, including the 10<sup>th</sup>-percentile, 25<sup>th</sup>-percentile, 50<sup>th</sup>-percentile, 75<sup>th</sup>-percentile, and 90<sup>th</sup>-percentile, in addition to minimum and maximum values.



**Figure 3: Screenshot of MARISA IDF Curve Data Tool Showing Median County Change Factors<sup>3</sup>**

<sup>2</sup> Representative concentration pathways (RCPs) are greenhouse gas emissions scenarios based on different assumptions about energy usage and economic activity in the future. RCP 4.5 represents a decline in emissions around 2045. RCP 8.5 represents increasing emissions through the 21<sup>st</sup> century.

<sup>3</sup> Projected Intensity-Duration-Frequency (IDF) Curve Data Tool for the Chesapeake Bay Watershed and Virginia (<https://midatlantic-idf.rcc-acis.org/>)

The Virginia Beach study<sup>4</sup> included both a statistical analysis of rainfall data after the cutoff for NOAA Atlas 14 and projections of future rainfall with climate change. The analysis found that the current 10-year event was approximately 10% larger in the Hampton Roads region than what is in NOAA Atlas 14. The climate analysis also considered both climate scenarios RCP 4.5 and RCP 8.5. The Virginia Beach study included mid-term (2045) and long-term (2075) estimates for the 24-hour rainfall duration for the 1-year, 2-year, 5-year, 10-year, 20-year, 50-year, and 100-year return periods. The study also modeled historical values to compare with NOAA Atlas 14. The change between the modeled historical value and the future projected value ranged from 11% to 23% for the mid-term and from 19% to 36% for the long-term. Although the Virginia Beach study provided both mid-term and long-term estimates of future rainfall depths for each return period, the final recommendation was for the city to apply a 20% increase above NOAA Atlas 14 values for all return periods instead of using the individual calculated values.

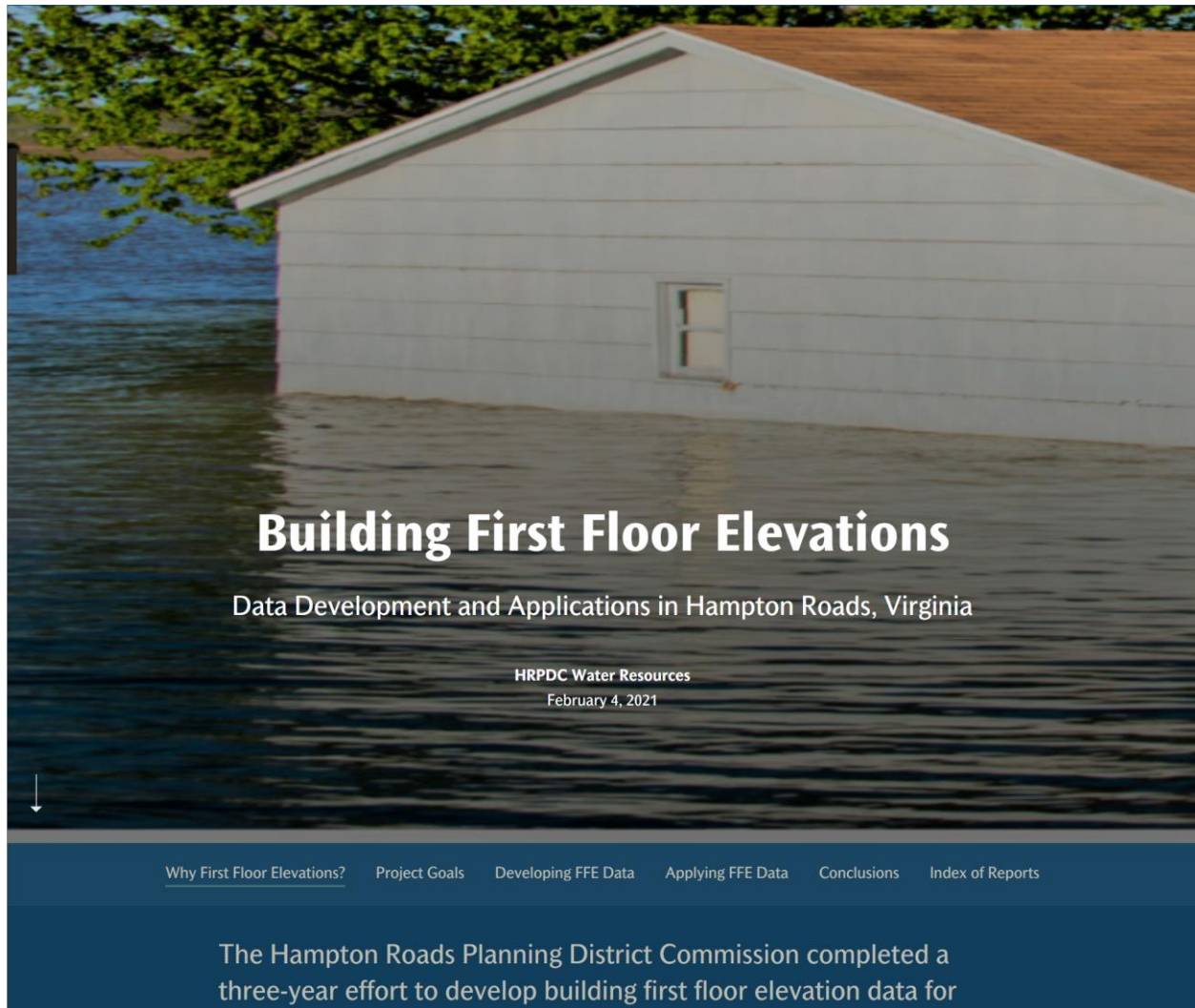
To develop design rainfall depths for the rest of the Hampton Roads region, the HRPDC staff obtained raster surfaces of NOAA Atlas 14 for each return period. Locality-specific values for each return period were determined based on the centroid of each community. Climate-informed design precipitation depths were then calculated for each locality using the change factors developed as part of the Chesapeake Bay Program effort and using the 20% increase adopted by Virginia Beach. The resulting design precipitation depths were then shared with each locality in August 2021 and considered by the HRPDC Coastal Resiliency Working Group in the development of regional resilient design guidelines.

### **Building First Floor Elevations Storymap**

The HRPDC staff previously completed a three-year CZM Focal Area grant to develop first floor elevation data and use it for hazard analysis. Since the completion of that project, the HRPDC staff has continued to add to the database of elevation certificates and develop additional local models to develop estimates for properties without elevation certificates. As part of this ongoing effort, the HRPDC staff develop a storymap for the regional GIS data portal, [www.HRGEO.org](http://www.HRGEO.org), to share information on the overall effort and explain the significance of first floor elevation data. Storymaps are an online tool built for ArcGIS Online that allow creators to combine GIS data, text, images, and web map applications into an easily accessible format. The “Building First Floor Elevations” storymap, published in February 2021, provides information on the effort’s background, purpose, goals, methods, and applications. It includes a web map application showing the location of buildings with elevation certificates in the regional database along with FEMA flood zones. It also includes links to the three reports developed as part of the original project from 2017 to 2020. The storymap is available online at <https://www.hrgeo.org/apps/building-first-floor-elevations/explore>.

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<sup>4</sup> “Analysis of Historical and Future Heavy Precipitation,” March 26, 2018 (CIP 7-030, PWCN-15-0014, Work Order 9A) <https://www.vbgov.com/government/departments/public-works/comp-sea-level-rise/Documents/anaylsis-hist-and-future-hvy-precip-4-2-18.pdf>



**Figure 4: Screenshot of "Building First Floor Elevations" Storymap**

### **Flood Insurance Outreach**

The HRPDC continued to improve its regional flood insurance outreach program. This program, [www.GetFloodFluent.org](http://www.GetFloodFluent.org), encourages users to purchase flood insurance and supports locality participation in the CRS. New content covering flood zones, homeowner flood mitigation measures, and flood safety was added to GetFloodFluent.org in the spring of 2021. Under “What do I need to know about flood risk?” on the GetFloodFluent.org website, a web mapping application was added that allows website visitors to locate their flood zone. Tool users can search by address to locate a specific building footprint and click on the building footprint to identify the flood zones it intersects. Descriptions of the primary flood zones in Hampton Roads are provided to explain the different flood zones that appear on the map. Under the “How?” tab of the GetFloodFluent.org website, new content has been added to address the following questions: (1) “How do I protect my home and property?” and (2) “How do I stay safe?” This content covers additional flood mitigation strategies that homeowners can implement, including elevating structures, installing flood vents, and properly managing rainfall. Content for flood

safety includes staying informed of weather events, knowing your evacuation zone, and avoiding walking or driving through flood waters. The new content areas were designed to align with outreach messaging that is used through the National Flood Insurance Program Community Rating System (CRS).

Resources were also added to the campaign toolkit on the GetFloodFluent.org website. In spring 2021, a new 1-minute animated video was added that covers flood risk, important facts about flood insurance, and how to estimate flood insurance premiums using the flood risk calculator on GetFloodFluent.org. In fall 2021, a new version of the “Fill Up on Flood Facts” rack card was published on the website to assist with locality outreach efforts. The new rack card includes information on how to protect your home and property from flooding and how to stay safe during a flooding event. HRPDC staff coordinated with the Coastal Virginia Community Rating System Workgroup and Insurance Services Office, Inc. (ISO) staff to ensure messaging corresponded with the six outreach messages available for credit under CRS Activity 330.

### **Local Assistance and Coordination**

This element of the Hampton Roads Technical Assistance Program entails staff support and assistance to local governments and private entities as they address key coastal resources and other environmental issues such as sea level rise adaptation, floodplain management, water quality, land conservation, habitat restoration, shoreline management, energy development, wetlands and dune protection, public access, and nonpoint source pollution in their comprehensive planning processes and related activities. Specific local projects or issues to be addressed through this element are identified by the localities throughout the grant year. These requests encompass assistance on grant proposals, assistance on permit issues, identification of state or federal agencies that may be of assistance for local projects, information about legislation or regulations, identification of technical resources that may be useful to a locality in developing a study, and responding to an elected official's request for information. The localities and others frequently turn to the HRPDC for assistance on GIS mapping and analysis projects. Through this element of the program, the HRPDC staff also assists private or non-profit entities, such as the Wetlands Watch, Elizabeth River Project, and others in their initiatives. A major component of these services is the maintenance and sharing of GIS data on a variety of topics. During this grant year, the HRPDC staff assisted localities with data needs for resiliency (sea level rise inundation areas, first flood elevation data, elevation certificates, etc.) and water quality (e.g., Chesapeake Bay Preservation Areas). In addition, the HRPDC staff continues to work with local government representatives to identify research priorities for issues of interest. The HRPDC staff continues to utilize the region's GIS data portal, [www.HRGEO.org](http://www.HRGEO.org), by adding GIS datasets created as part of regional initiatives and developing storymaps and other applications. A “Map of the Month” feature highlights a new topic each month, such as historic storm tracks, military populations, redistricting, and others, using GIS data. Examples of applications developed over the past year include a training module for CBPA boards and updated locality resiliency policy summaries. The HRPDC staff also continues to update the regional parcels layer, which efficiently combines datasets from the HRPDC's member localities into a single layer.<sup>5</sup>

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<sup>5</sup> <https://www.hrgeo.org/pages/regional-parcels>

## Public Information, Education, and Training (Product #2)

An integral component of the Hampton Roads Technical Assistance Program is the provision of public information and education on environmental issues in the Hampton Roads region. Provision of public information and education was identified by the participating localities at the outset of the program in 1986 as a critical need that could be met cooperatively through the HRPDC. Since that time, the HRPDC staff has provided written communications and briefings to the Commission and a wide range of interest groups on environmental issues and has provided regular briefings to many of those groups. These efforts continued during the grant year.

To ensure that the members of the HRPDC board are kept informed about the status of ongoing HRPDC coastal resources management program activities and pending environmental issues that may affect the Hampton Roads region, the HRPDC staff routinely briefs the Commission on coastal resources management issues of importance. During the year, briefings were given to the HRPDC board on commercial property assessed clean energy programs for resiliency, proposed changes to the Virginia Uniform Statewide Building Code, offshore wind, environmental education, flooding, the CBPA, the VCRMP, and the Lower Chickahominy Watershed Collaborative.

The HRPDC staff has provided briefings on regional environmental programs, environmental issues and state and federal regulations to a variety of groups and given presentations on related HRPDC technical studies and programs at several state, regional, and national conferences. Briefings are also provided to state agency boards, legislative commissions, local government planning commissions, city councils/county boards, and town councils on request. During the grant period, HRPDC staff presented individually or on panels on several environmental issues, including locality-military coordination, stormwater management, flood insurance, and coastal resiliency. These meetings and presentations are summarized in Table 1.

The HRPDC regularly updates its website, [www.hrpdcva.gov](http://www.hrpdcva.gov), with news articles and reports from HRPDC staff. During this grant, HRPDC planning staff posted sixteen (16) entries related to coastal management issues, covering topics such as the CBPA, stormwater management, water quality, drinking water, urban planning, first floor elevations, historic storm risk, and coastal resiliency. The HRPDC staff continues to update the agency's website, adding and updating program information, meeting materials, presentations from conferences or other outside events, and technical reports and other work products. All Commission and most committee meeting agenda materials are now posted and available on the HRPDC website. It contains an extensive section devoted to the HRPDC's regional planning, coastal resiliency, and water resources programs, including links to other federal, state, local, and private sector sites. Efforts to further enhance the website remain ongoing. A Commission Action Summary is posted after each meeting, and the meetings can be viewed on the organization's YouTube channels.<sup>6</sup> Recordings of many virtually held meetings have also been posted to the agency's website and YouTube channels.

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<sup>6</sup> <https://www.youtube.com/user/HRPDC> and <https://www.youtube.com/channel/UCbfXhXsIMTXq9wEitbPBVg>



**Table 1: FY20-21 Coastal Resources Presentations by HRPDC Staff**

<b>Date</b>	<b>Event/Audience</b>	<b>Presentation Title</b>
<b>October 16, 2020</b>	2020 American Shore & Beach Preservation Association National Coastal Conference	“Developing First Floor Elevation Data for Coastal Flooding Vulnerability Assessments”
<b>November 2, 2020</b>	Fall 2020 Virginia Floodplain Managers Workshop	“Resilient Design Guidelines for Hampton Roads”
<b>December 16, 2020</b>	National Conference of State Legislatures	“Working Together to Become More Resilient: Joint Land Use Studies in Hampton Roads”
<b>February 9, 2021</b>	Coastal GeoTools 2021	“Applying First Floor Elevation Data to Coastal Flooding Vulnerability”
<b>February 10, 2021</b>	Coastal GeoTools 2021	“Mapping Future Flood Vulnerability for Resilient Design Standards”
<b>March 12, 2021</b>	Berkshire Hathaway HomeServices	“Get Flood Fluent: Regional Flood Insurance Outreach”
<b>March 19, 2021</b>	Hampton Roads Adaptation Forum	“Flood Insurance Outreach: Calculating and Communicating Risk”
<b>March 22, 2021</b>	City of Chesapeake Stormwater Committee	“Get Flood Fluent: Regional Flood Insurance Outreach”
<b>March 25, 2021</b>	2021 Environment Virginia Symposium	“Toward a More Resilient Hampton Roads”
<b>March 25, 2021</b>	Hampton Roads Federal Planner Cohort	“Regional Coordination in Hampton Roads”
<b>May 13, 2021</b>	Hampton Roads Chamber of Commerce LEAD757 Day	“Regional Coordination for a Resilient Hampton Roads”
<b>May 18, 2021</b>	GWRC Regional Environmental Managers Technical Committee	“Get Flood Fluent: Regional Flood Risk Outreach”
<b>June 29, 2021</b>	Portsmouth City Schools Camp Answer	“Coastal Resiliency Planning Hampton Roads”
<b>July 14, 2021</b>	Chesapeake Planning Commission	“Regional Coordination for a Resilient Hampton Roads”
<b>July 28, 2021</b>	Coastal Virginia CRS Workgroup	“Get Flood Fluent: Flood Insurance Outreach Updates”
<b>September 15, 2021</b>	Society of American Military Engineers – Hampton Roads Post	“Regional Coordination for a Resilient Hampton Roads”
<b>September 30, 2021</b>	2021 American Shore & Beach Preservation Association National Coastal Conference	“Communicating Coastal Resiliency Actions in Hampton Roads, Virginia”

Through the Regional Environmental Committee, HRPDC staff has provided, facilitated, or hosted training on a variety of topics to localities. The HRPDC has partnered with state or federal agencies on various training events by providing logistical support. The HRPDC continues to partner with Old Dominion University (ODU) and Virginia Sea Grant to hold meetings of the Hampton Roads Sea Level Rise/Recurrent Flooding Adaptation Forum. The HRPDC staff helps ODU faculty develop agendas, coordinate speakers, and publicize events. In addition, the HRPDC staff has established a CBPA Working Group that brings together CBPA staff from each locality to share insights, ask questions, and discuss program implementation. This group met five (5) times during the grant year. The HRPDC staff has also established a Coastal Resiliency Working Group to provide a forum for technical discussions on resiliency-related issues. This group met five (5) times during the grant yet. The specific training opportunities are listed in Table 2.

**Table 2: Educational and Training Opportunities Provided in FY20-21**

<b>Date</b>	<b>Topic</b>	<b>Event</b>	<b>Host</b>	<b>Attendance</b>
<b>October 28, 2020</b>	CBPA Property search tool, CBPA regulations, tidal wetlands guidelines	HRPDC CBPA Workgroup	HRPDC*	21
<b>November 20, 2020</b>	Regional resiliency design guidelines	HRPDC Coastal Resiliency Working Group	HRPDC*	42
<b>January 27, 2021</b>	CBPA outreach material, CBPA regulations	HRPDC CBPA Workgroup	HRPDC*	25
<b>March 12, 2021</b>	Chesapeake Bay Program Future IDF Curve Tool	HRPDC Coastal Resiliency Working Group	HRPDC	33
<b>March 19, 2021</b>	Flood insurance outreach tools, environmental impact bonds	Hampton Roads Adaptation Forum	ODU*	125
<b>April 7, 2021</b>	Tidal wetlands guidelines	HRPDC CBPA Workgroup	HRPDC*	17
<b>April 23, 2021</b>	Virginia Community Flood Preparedness Fund	HRPDC Coastal Resiliency Working Group	HRPDC*	44
<b>May 27, 2021</b>	Local CBPA board training materials, CBPA regulations, tidal wetlands guidelines	HRPDC CBPA Workgroup	HRPDC*	16
<b>June 21, 2021</b>	CBPA regulations	HRPDC CBPA Workgroup	HRPDC*	24
<b>July 23, 2021</b>	RISE pilot program opportunities	HRPDC Coastal Resiliency Working Group	HRPDC*	32
<b>August 20, 2021</b>	Regional resiliency design guidelines	HRPDC Coastal Resiliency Working Group	HRPDC*	45

\*These meetings were held virtually.

## **Benefits Accrued from Prior CZM Grants (Product #5)**

In October 2008, the HRPDC was awarded the first of a series grants by the CZM to study the impacts of climate change on the Hampton Roads region and identify potential responses to those impacts (FY '08 Task 12.03). Additional grants were awarded in 2009 (FY '09 Task 12.04), 2010 (FY '10 Task 12.04), 2011 (FY '11 Task 51), 2014 (FY '13 Task 54), 2015 (FY '15 Task 94.01), 2017 (FY '17 Task 84), 2018 (FY '18 Task 84), 2019 (FY '19 Task 84), and 2020 (FY '20 Task 43). These efforts have required considerable research and analysis and have resulted in several reports which are now available on the HRPDC's website. These reports documented the results of various GIS analysis, mapping, and policy efforts, and have formed part of the basis for an ongoing regional discussion of how local governments in Hampton Roads should respond to climate change impacts, particularly sea level rise, which was early on identified as one of the greatest concerns for this region. Based in part on this work, the HRPDC's member localities have consistently recognized the importance of these issues and have support regional coordination to address them. In 2016 the HRPDC created a new, locally funded Coastal Resiliency Program, to provide coordination and technical assistance services to the region's localities. This program has been supplemented in the last year with focused discussions from the region's chief administrative officers and a new subcommittee of the HRPDC board.

A major recent outcome of these grants was the creation of a regional database of elevation certificates used to develop models for estimating the first-floor elevations of properties without surveys or elevation certificates. Since the completion of that grant project in 2020, the HRPDC staff has continued to improve the regional elevation certificate dataset with several goals in mind. First, adding additional certificates makes the development of additional local models more feasible and accurate. Second, larger datasets are more useful to localities, state agencies, and academic partners for hazard mitigation planning, resiliency planning, and research efforts. Third, making elevation certificates available (either as a list of addresses with certificates or the actual certificates themselves) through an online portal supports locality participation in the CRS, which can lower flood insurance rates for policy holders in those communities.

The regional database of elevation certificate information, available at HRGEO.org, was updated on December 11, 2020. This update included new elevation certificates completed since the 2019 database update, as well as the complete inventory of Gloucester County elevation certificates and additional Norfolk elevation certificates completed prior to 2015. The Center for Geospatial, Science, Education, and Analytics at ODU provided student support for the data entry for the Gloucester County and Norfolk elevation certificates during the summer of 2020. A total of 1,446 elevation certificates were added to the online inventory in the December 2020 update, bringing the regional database total to 4,009 certificates (Table 3).

Poquoson has an extensive inventory of elevation certificates, previously available only as paper copies. In order to add these elevation certificates to the regional database, HRPDC staff coordinated with Poquoson staff to scan the paper elevation certificates during the summer of 2020. HRPDC staff reviewed and labeled scanned copies of elevation certificates and provided the final scanned copies to

Poquoson staff in December 2020. To record the information from the elevation certificates for use in GIS, HRPDC staff coordinated with Old ODU and the Commonwealth Center for Recurrent Flooding Resiliency (CCRFR). ODU/CCRFR provided student support to enter data from the Poquoson elevation certificates during the summer of 2021, with data entry completed July 1, 2021. HRPDC staff joined the recorded elevation data with parcels and building footprints in GIS for a total of 1,378 parcels and 1,263 building footprints. Based on the available elevation certificate data, first floor heights were calculated for 1,210 structures. The resulting data was provided to AECOM, in addition to the previously completed regional first floor elevation database, to support the flooding hazard vulnerability analysis for the Hampton Roads hazard mitigation plan update.

**Table 3: Summary of total elevation certificates included and new elevation certificates added to the regional GIS database in 2020 by locality**

Locality	Total Elevation Certificates	Elevation Certificates Added in 2020
Chesapeake	658	22
Franklin	172	3
Gloucester County	678	678
Hampton	700	12
James City County	195	9
Newport News	7	1
Norfolk	776	655
Portsmouth	107	17
Southampton County	33	0
Suffolk	3	0
Virginia Beach	238	39
York County	442	10
<b>TOTAL</b>	<b>4,009</b>	<b>1,446</b>

### Regional Resiliency Coordination (Product #6)

The HRPDC coordinates and manages a regional resiliency program that includes policy development, technical analysis, research, and coordination. The coordination aspect of this program is conducted through the HRPDC Coastal Resiliency Committee, which includes representatives designated by each HRPDC locality chief administrative officer. The committee provides feedback on regional initiatives, serves as a forum for discussing best practices and sharing information, and helps develop regional recommendations. The following meeting summaries describe the discussions of the HRPDC Coastal Resiliency Committee during the past year. During this grant year the Coastal Resiliency Committee met four (4) times. Meetings were held virtually via the WebEx platform due to COVID-19.

**Meeting Date:** December 11, 2020

**Summary:** The primary focus of this meeting was coastal hazards. The meeting featured a presentation from Dr. Matthias Wittenberg and Mr. Mike Morgan, CDM Smith, on a climate change planning study the firm is conducting for HRSD. The meeting also included updates from the HRPDC staff on regional legislative proposals for the 2021 General Assembly session, the Virginia Coastal Resilience Master Planning Framework, and the regional first floor elevations project.

**Outcome(s):** Outcomes of this meeting included increased awareness of regional and state resiliency efforts.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1208/coastal-resiliency-committee/>

**Total Attendance:** 43

**Total Stakeholders:** 28

**Meeting Date:** March 26, 2021

**Summary:** The primary focus of this meeting was coastal hazards. The meeting featured presentations from the HRPDC staff on the VCRMP, regional legislative proposals for the 2021 General Assembly session, regulatory developments related to the CBPA and tidal wetlands, regional resilient design guidelines, roadway flooding sensors, and flood insurance outreach.

**Outcome(s):** Outcomes of this meeting included feedback on the proposal regional resilient design standards and awareness of the VCRMP process and proposed changes to the Chesapeake Bay Preservation Area Designation and Management Regulations and tidal wetlands guidelines.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1230/coastal-resiliency-committee/>

**Total Attendance:** 68

**Total Stakeholders:** 43

**Meeting Date:** June 25, 2021

**Summary:** The primary focus of this meeting was coastal hazards. The meeting featured a presentation from Mr. Chris Swanson, VDOT, on the agency's resilience efforts. The meeting also included a joint update on the VCRMP from RADM Ann Phillips, Special Assistant to the Governor for Coastal Adaptation and Protection, and the HRPDC staff. The meeting also included briefings from the HRPDC staff on the CFPF, the regional roadway flooding sensors project, flood insurance outreach, and regional resilient design standards.

**Outcome(s):** Outcomes of this meeting included increased awareness of resilience efforts by VDOT and the status of the VCRMP and feedback on the proposed regional resilient design guidelines.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1287/coastal-resiliency-committee/>

**Total Attendance:** 74

**Total Stakeholders:** 44

**Meeting Date:** September 24, 2021

**Summary:** The primary focus of this meeting was coastal hazards. The meeting featured a presentation from Mr. Jim Duda, U.S. Geological Survey (USGS), on the regional subsidence monitoring project and a presentation from Mr. Robbie Coates, Virginia Department of Emergency Management (VDEM), on the Federal Emergency Management Agency (FEMA)'s Building Resilient Infrastructure and Communities

(BRIC) Program. The meeting also included presentations from the HRPDC staff on the FY23 HRPDC Coastal Resiliency Program budget, the regional resilience project tracking effort, flood insurance outreach, regional resilient design standards, the VCRMP, and the regional roadway flooding sensors project.

**Outcome(s):** Outcomes of this meeting included feedback on the proposed regional resiliency design guidelines.

**Meeting Materials:** <https://www.hrpdcva.gov/events/details/1355/coastal-resilience-committee-meeting/>

**Total Attendance:** 66

**Total Stakeholders:** 42

The Coastal Resiliency Working Group provides a forum for in depth discussion of technical issues that require more time and focus than is available during typical committee meetings. During this grant year, the Coastal Resiliency Working Group met five (5) times on November 20, 2020, March 12, 2021, April 23, 2021, July 23, 2021, and August 20, 2021. Topics included pilot projects with RISE Resilience Innovations, resilient design standards, and the CFPF.

### **Coastal Zone Resilience Database Support (Product #7)**

The HRPDC staff continued to maintain and update its resilience project database and dashboard tool. This tool allows for convenient access to regional project data that can be downloaded and used by other partners such as the CZM and the VCRMP Technical Advisory Committee (TAC) members. The dashboard<sup>7</sup>, which can be found on [www.HRGEO.org](http://www.HRGEO.org), was first published in May 2019 and has been updated several times since to make sure that information on the included projects is current (see Figure 5). As part of the bi-annual update of the regional inventory of resilience projects, HRPDC staff submitted spreadsheet copies of the current inventory to local government staff for review in January 2021. Changes to existing projects and new projects were imported to GIS to update the regional inventory. The new data was published on HRGEO.org on February 9, 2021. A second data call was issued in September 2021 for project updates. As of September 30, 2021, the data updates were being finalized in GIS, with the goal of publishing the updated information on [www.HRGEO.org](http://www.HRGEO.org) in late October 2021. Approximately 174 new projects will be added as part of the October update, with 132 of those projects submitted by Hampton.

Table 4 below compares the number of new projects added, number of projects that advanced status (i.e., from under design to under construction), the total number of projects, and total value of project costs in the inventory following the January 2021 and September 2021 data calls. The most abundant project type continues to be drainage improvements, making up 45% of total projects following both data calls. Table 5 summarizes the project costs and number of projects by project status following the January and September 2021 data calls.

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<sup>7</sup> <https://www.hrgeo.org/apps/hampton-roads-resilience-projects-dashboard/explore>

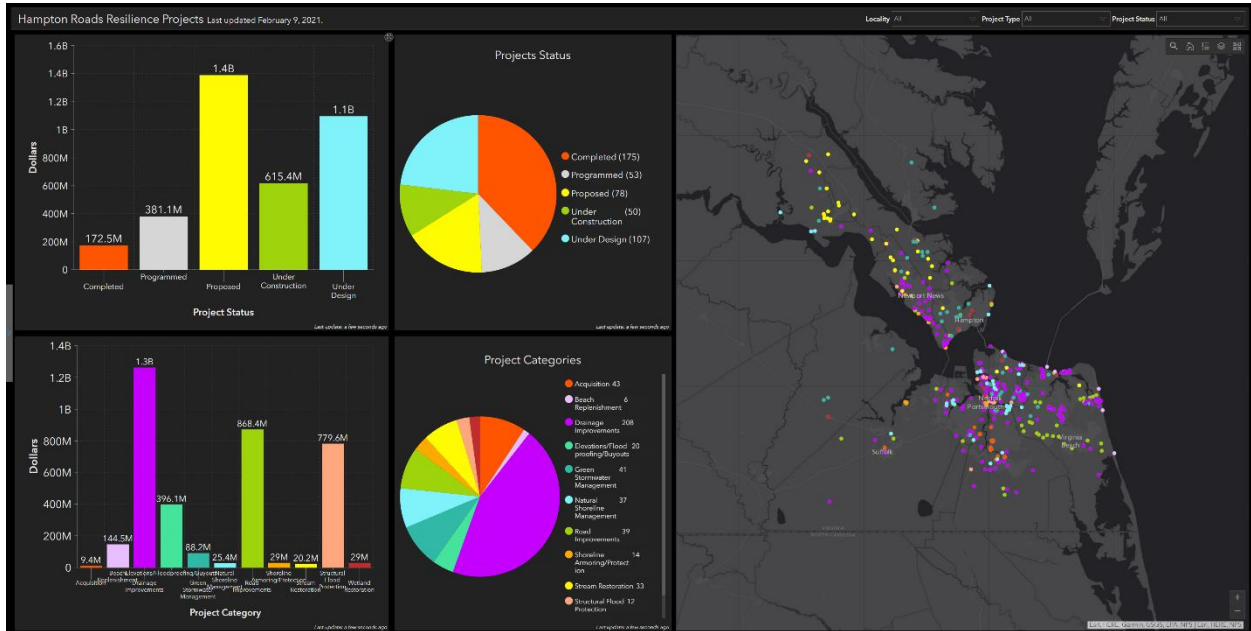
**Table 4: Summary of the number of projects and project cost (billions of dollars) within the regional resilience project inventory following the 2021 data calls.**

Month of Data Call	New Projects	Projects Advanced	Total Projects	Total Project Costs
January 2021	36	29	463	\$3.65 B
September 2021*	174	24	606	\$7.27 B

\* Please note that select previous projects were consolidated or deleted due to changes in feasibility.

**Table 5: Summary of total project costs in billions (B) or millions (M) of dollars and number of projects, reported in parentheses, by project status following the 2021 data calls.**

Month of Data Call	Proposed	Programmed	Under Design	Under Construction	Completed
January 2021	\$1.39 B (78)	\$381 M (53)	\$1.10 B (107)	\$615 M (50)	\$173 M (175)
September 2021	\$4.76 B (171)	\$373 M (60)	\$1.29 B (135)	\$659 M (50)	\$193 M (190)



**Figure 5: Screenshot of the Hampton Roads Resilience Projects Dashboard**

## Coastal Resiliency Master Plan Development Support (Product #8)

During this grant year the HRPDC staff supported the development of the VCRMP by participating on the TAC, sharing information and developments with locality staff through the HRPDC’s Regional Environmental Committee and Coastal Resiliency Committee, and providing information, data, and feedback on materials from the plan contractor. The HRPDC had two representatives on the TAC: Mr.

Bob Crum, HRPDC Executive Director, and Ms. Whitney Katchmark, HRPDC Principal Water Resources Engineer. In addition to the main TAC, Mr. Crum served on the Finance Subcommittee, and Ms. Katchmark served on the Project Evaluation Subcommittee and as the vice chair of the Federal Installation Partnerships Subcommittee. Participating on the TAC and its subcommittees involved attending numerous virtual and in-person meetings, providing feedback on draft materials, and helping develop committee recommendations for the administration's consideration. The HRPDC also hosted two charettes for locality staff and other key stakeholders and a public meeting on August 5, 2021.

In addition to participating on the TAC, the HRPDC staff supported the development of the VCRMP by adapting its resilience project database to the format requested by the plan contractors. This reduced the overall level of effort needed for localities to submit projects for inclusion in the master plan database. The HRPDC staff also submitted regional and local projects that had been identified in previous regional resiliency initiatives such as the Norfolk-Virginia Beach and Portsmouth-Chesapeake Joint Land Use Studies.

### **Identification of Regional Resilience Priorities and Needs (Product #9)**

During this grant year, the HRPDC staff worked with the HRPDC Coastal Resiliency Committee, locality chief administrative officers, and the HRPDC board to identify key priorities for new public policies, funding needs, and data needs. Several of these priorities were reflected in the HRPDC's 2021 Regional Legislative Agenda, which was adopted by the HRPDC board on October 15, 2020.<sup>8</sup> These priorities included obtaining updating NOAA Atlas 14 data for Virginia, incorporating resilience into the SMART SCALE funding program for transportation infrastructure, adding a flood vulnerability and history disclosure requirement during property transactions, and the creation of a Virginia Commonwealth Flooding Board to coordinate statewide resilience planning and coordinate local, regional, and state efforts. Since the adoption of these priorities, the HRPDC staff and Coastal Resiliency Committee have identified several other data needs, including accurate stormwater management infrastructure data for modeling flooding, additional first floor elevation data, and roadway surface elevation data.

In addition to these policy and data needs, the region continues to develop recommendations for specific adaptation strategies and projects. Through the Coastal Resiliency Committee and the Coastal Resiliency Working Group, the HRPDC staff has led discussions on potential ways to rank or score resilience projects using agreed-upon metrics. Although no agreed-upon mechanism has been identified, partly due to the lack of dedicated funding for resilience projects (similar to federal transportation funding for metropolitan planning organizations), these discussions are ongoing.

## **Conclusions**

The Hampton Roads Coastal Resources Management Technical Assistance Program continues to enable the HRPDC staff to provide important and timely assistance to local governments and other stakeholders throughout Hampton Roads on a variety of environmental issues. The capacity for the HRPDC to provide

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<sup>8</sup> [https://www.hrpdcva.gov/uploads/docs/HRPDC\\_HRTPO%202021%20Regional%20Legislative%20Agenda.pdf](https://www.hrpdcva.gov/uploads/docs/HRPDC_HRTPO%202021%20Regional%20Legislative%20Agenda.pdf)



these serves is greatly enhanced through the resources provided by CZM. The technical assistance, public information, educational opportunities, training, research, analysis, and coordination services provided through this program serve the region's citizens, government officials, locality staff, and other partners and stakeholders. This program continues to be a key part of the region's overall strategy for managing its coastal resources and addressing new challenges, from stormwater management regulations to alternative energy development to climate change. These services continue a decades-long relationship between the HRPDC and CZM to identify issues of interest and concern before they become problems so that they can be addressed in a costs-effective manner.