

# **ALBEMARLE-PAMLICO NATIONAL ESTUARY PARTNERSHIP**

**Annual Work Plan  
for  
October 1, 2018 - September 30, 2019  
under the  
Cooperative Agreement for October 1, 2014 to September 30, 2020  
Between  
The United States Environmental Protection Agency  
And the  
North Carolina Department of Environmental Quality  
in Cooperation with the  
Commonwealth of Virginia**



*Approved By  
APNEP Leadership Council  
on  
April 30, 2018*

*NC Wildlife Resources Commission,  
NCSU Centennial Campus, Raleigh, NC*

*U.S. EPA Cooperative Agreement CE-0D20614  
Region IV  
April 30, 2018*

## TABLE OF CONTENTS

<b><u>CONTENTS &amp; CONTACTS</u></b>	<b><u>3</u></b>
<b><u>INTRODUCTION</u></b>	<b><u>4</u></b>
<b><u>AUTHORITY</u></b>	<b><u>6</u></b>
<b><u>2017-18 PROJECTS &amp; ACTIVITIES UPDATE</u></b>	<b><u>8</u></b>
<b><u>2018-19 PROPOSED PROJECTS &amp; ACTIVITIES</u></b>	<b><u>33</u></b>
<b><u>ADMINISTRATION AND FINANCIAL</u></b>	<b><u>36</u></b>
<b><u>FEDERAL COST SHARE (Budget)</u></b>	<b><u>45</u></b>
<b><u>NON-FEDERAL COST SHARE (Match)</u></b>	<b><u>47</u></b>
<b><u>TRAVEL</u></b>	<b><u>48</u></b>
<b><u>APPENDIX A: 2012-22 CCMP Goals and Outcomes</u></b>	<b><u>51</u></b>
<b><u>APPENDIX B: 2012-22 CCMP Actions</u></b>	<b><u>52</u></b>



## CONTENTS & CONTACTS

---

### **Required Cooperative Agreement Related Contents in this Document:**

- A report of accomplishments since February 25, 2017 is provided on pages 8 through 32.
- Proposed Work Plan items for 10/1/18 to 9/30/19 are presented on pages 33 through 36.
- The Proposed Work Plan budget for 10/1/18 to 9/30/19 is presented on page 47.
- Administrative and financial information items are presented on pages 36 through 50.

**Purpose:** The purpose of cooperative agreement *CE-CE-0D20614* is to provide support to the North Carolina Department of Environmental Quality (NCDEQ) from the US Environmental Protection Agency (EPA) for continuing implementation of the unique management strategies and actions recommended in the Albemarle-Pamlico National Estuary Partnership's (APNEP) 2012-2022 Comprehensive Conservation and Management Plan (CCMP) and support for the APNEP mission to identify, restore and protect the significant resources of the region.

**Funding:** This work plan and the associated grant application represent a funding request of \$600,000 for year 4 (10/1/18 to 9/30/19) under cooperative agreement *CE-0D20614* for the time period of October 1, 2014 to September 30, 2020. This request will be for the fourth year and constitute the fifth modification to this cooperative agreement. Funding last year was provided in two separate awards.

### **Period of Performance:**

The period of performance under the current Cooperative Agreement *CE- CE-0D20614* is from October 1, 2014 through September 30, 2020.

### **Principal Contacts:**

#### **EPA Project Officer**

**Ms. Rachel Hart**  
US EPA, Region IV  
61 Forsyth Street  
Atlanta, GA 30303  
(404) 562-9279

#### **APNEP Director**

**Dr. William L. Crowell, Jr.**  
Albemarle-Pamlico NEP  
1601 Mail Service Center  
Raleigh, NC 27699-1601  
(919) 707-8633

#### **Leadership Council Chair**

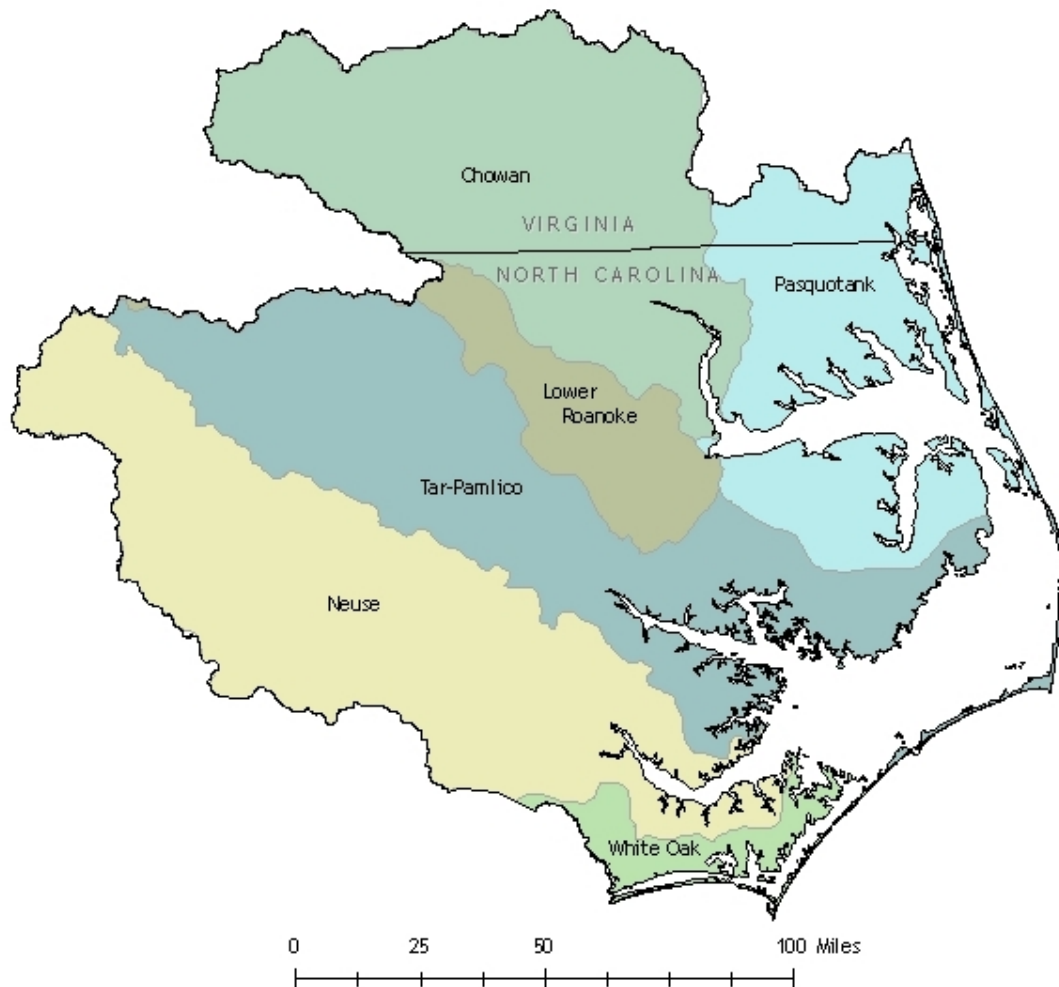
**Dr. Kirk Havens**  
VA Institute of Marine Sci.  
P.O. Box 1346  
Gloucester Pt, VA 23062  
(804) 684-7380



## INTRODUCTION

The Albemarle and Pamlico Sounds comprise the nation's largest semi-lagoonal estuarine system. The system is composed of eight sounds and five major river basins draining over 30,000 square miles of watershed in North Carolina and Virginia. The sounds, rivers, creeks, wetlands and terrestrial areas provide habitat for an abundance of animal and plant species. People depend on the system for residential and resort development, food, recreation, mining, forestry, agriculture, business, and industry.

The Albemarle-Pamlico National Estuary Partnership (APNEP) is a component of the U.S. Environmental Protection Agency's (EPA) National Estuary Program (NEP). It was one of the first programs established under amendments to the Clean Water Act in 1987. The initial Comprehensive Conservation and Management Plan (CCMP) was ratified by the Governor of North Carolina and approved by the EPA in November 1994. The APNEP Policy Board approved a revised CCMP and submitted to the EPA in March 2012. The 2012-2022 CCMP advances an ecosystem-based management (EBM) paradigm and is intended as a practical, cost-effective and equitable approach to managing the valuable resources within the Albemarle-Pamlico region.



## The APNEP Ecosystem-Based Management Approach

*Ecosystem-based management* (EBM) is based on the tenet that managing natural resources from a systems perspective increases the likelihood of success by forging more effective connections among humans, nature, science, and management actions. Before 2012, APNEP worked with limited resources to integrate and implement EBM concepts and tools within the program and with its local, state, and federal partners, albeit in a piecemeal fashion. Given the relative complexity and increased resources required up front to implement EBM in full, APNEP staff began actively working toward a paradigm change in 2008 with the APNEP Policy Board, advisory committees, and partners.

This activity culminated in March 2012 with the adoption of a new CCMP based on EBM principles to replace the original 1994 CCMP. As implementation of this Work Plan begins, APNEP anticipates completing the development of its ecosystem indicators and monitoring strategy to support the new EBM-based CCMP. With a 2012-2022 CCMP established for a ten-year planning horizon, this work plan includes a proposal to support activities of the CCMP Implementation Workgroups for actions that support the desired ecosystem and management outcomes.

***Ecosystem-Based Management (EBM)*** is a management approach<sup>1</sup> that:

- Is concerned with the ecological integrity that sustains both human and natural resources systems.
- Integrates ecological, social, and economic goals and recognizes humans as key components of the ecosystem.
- Considers ecological, not just political, boundaries.
- Addresses systems and the complexity of natural processes and uses adaptive management to reduce risks related to decisions and actions.
- Engages multiple stakeholders in a collaborative process to define problems and find solutions providing mutual benefit.

[http://www.ebmtools.org/about\\_ebm.html](http://www.ebmtools.org/about_ebm.html)



## **AUTHORITY**

---

### **Federal Water Pollution Control Act**

Congress established the National Estuary Program (NEP) in 1987 to improve the quality of *Estuaries of National Significance*. The Federal Water Pollution Control Act (33 U.S.C. 1251 *et seq.*), Section 320 directs EPA to develop plans for attaining or maintaining water quality in an estuary. This includes: protection of public water supplies; the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife; allowance of recreational activities in and on water; and control of point and nonpoint sources of pollution to supplement existing controls of pollution. Each program establishes a Comprehensive Conservation and Management Plan (CCMP) to meet the goals of Section 320.

### **Comprehensive Conservation and Management Plan**

In 1987, Congress designated the Albemarle-Pamlico estuarine system as *Estuary of National Significance* and thus began a comprehensive study effort, entitled the Albemarle-Pamlico Estuarine Study (APES). The result of this process was the APNEP CCMP. The initial CCMP was developed over a seven-year period by representatives from private and public sectors, including government, industry, business, environmental interest groups, and municipal officials. The plan is a guide for environmental stewardship of the Albemarle-Pamlico estuarine system. The CCMP reflects the input of people from the region that will be affected by the plan's recommendations. The CCMP seeks to balance the need for economic growth in region with the need to secure the environmental future of the region. Approved on March 14, 2012, the new CCMP replaces the original 1994 document.

### **North Carolina Governor's Executive Order #26**

On November 9, 2017, North Carolina Governor Roy Cooper issued Executive Order # 26: *Albemarle-Pamlico National Estuary Partnership*. This replaced Executive Order # 133 which expired on November 5, 2016 pursuant to N.C. Gen. Stat. § 147-16.2. A copy of Executive Order #26 is available from the APNEP office at 1601 MSC, Raleigh, NC 27699 and at [www.apnep.org](http://www.apnep.org).

### **APNEP Office**

The APNEP Office coordinates and facilitates the implementation and advancement of the CCMP, the APNEP mission, and the activities of the Leadership Council and Advisory Committees. The APNEP Office serves as a conduit for information between the Leadership Council, Advisory Committees, state and federal agencies, local governments, tribes, academia, and the public. The main office is located within the Secretary's Office of the NC Department of Environmental Quality in Raleigh, North Carolina, with additional program personnel in Washington and Beaufort, North Carolina. The Virginia Department of Environmental Quality also provides support through a position in Virginia Beach, Virginia.

### **Leadership Council**

This Leadership Council is the main advisory body for APNEP and the Management Conference. It was established by a North Carolina Governor's Executive Order to advise, guide, evaluate and support the CCMP implementation process, advance the CCMP and



its management actions, and to ensure the highest level of collaboration, coordination and cooperation among state and federal agencies, local governments, the public and various interest groups. The Leadership Council consults with the advisory committees and the APNEP Office for recommendations pertaining to implementation of CCMP actions at the regional and local levels, and the coordination and development of research and monitoring priorities. A major duty of the Leadership Council is to evaluate the relevance of the CCMP and to make recommendations to address emerging issues that may affect the significant natural resources of the Albemarle-Pamlico estuarine system. The Leadership Council, in cooperation with the APNEP Office, develops an annual report, budget and work plan.

### **Science and Technical Advisory Committee**

A Science and Technical Advisory Committee (STAC) was established in 2004 to provide independent advice to the Leadership Council and the Implementation Committee on scientific and technical issues, including ecosystem assessment and monitoring, in support of CCMP implementation.

### **Implementation Advisory Committee**

An Implementation Advisory Committee is currently being established to execute the actions necessary for CCMP implementation. The Implementation Advisory Committee will be comprised of representatives from the CCMP implementation action teams (see below), each of which will advance a discrete set of related CCMP actions. As the committee is being established an ad-hoc committee consisting of leadership of the STAC and Leadership Council accomplishes the role of the implementation committee in choosing projects for funding as needed.

### **Action Teams**

APNEP has established a number of CCMP Implementation Action Teams focused on implementing the objectives and actions in the CCMP. Additional teams will be established before 2019. Action Teams are responsible for developing the outputs associated with each action deemed necessary to achieve desired ecosystem outcomes. Action Team membership is open to any interested party. Details on each of the Actions Teams may be found [on the APNEP website](#).

### **Monitoring and Assessment Teams**

Two of the four phases of APNEP's adaptive management cycle, "Monitoring" and "Assessment", help ensure that stakeholders have regular, reliable decision support as to whether CCMP outcomes and actions are being achieved. To leverage program capacity and promote partner collaboration when implementing these two crucial phases, APNEP established in 2008-2009 six resource monitoring and assessment teams whose missions each addressed a major sub-system of the Albemarle-Pamlico regional ecosystem. Throughout 2017 and into early 2018, all teams were reactivated after a significant hiatus. Details on each team may be found [on the APNEP website](#).



## **2017-18 PROJECTS & ACTIVITIES UPDATE**

The following provides an update on activities and projects that APNEP has been involved in since the last annual work plan report approved on February 24, 2017. An update of all projects was also provided to EPA Region IV in December, 2017. As an EPA reporting requirement, all projects funded under this Cooperative Agreement since February 24, 2017 are summarized in the table on pages 39 - 43.

### **Program Administration & Indirect Costs (ongoing)**

For more detail see Administration and Financial section beginning of page 36.

CCMP Component:	All
CCMP Actions:	All
CCMP Outcome:	All
Intended Programmatic Output:	Program administration, partnership building, CCMP implementation
Intended Programmatic Outcome:	CCMP implementation
Status:	Ongoing
Estimated 320 Cost:	\$438,727 direct and \$51,623 indirect cost @15.1%

### **Management Conference Support**

The key element of CCMP implementation is active citizen participation through the Management Conference and the support Teams. Funds were used to support STAC and Policy Board meetings and materials as needed in the carryover budget item of Implementation Projects that are listed as follows.

### **2017 Teacher Institute**

APNEP continued its partnership with the UNC Institute for the Environment and others to offer a four-day teacher training institute at the Trinity Center in Salter Path, NC during summer 2017. Public school teachers from across the state were provided with curriculum training in earth and environmental sciences with hands-on activities, local site visits, and specific content to support inquiry, experiential, and research-based instruction on estuarine and watershed resources. This year's Teacher Institute was part of the year-long *ExPLORE NC* professional development program, also facilitated by the UNC Institute for the Environment and designed to provide continued education, support, and follow-up for teachers participating in the Teacher Institute.

CCMP Components:	Engage
CCMP Actions:	D 2.1, 2.2, 2.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	20 teachers trained in environmental education, water quality, and watersheds
Intended Programmatic Outcome:	Increased environmental education activities in North Carolina schools
Status:	2017 Institute Complete
Cost:	\$ 24,000
Estimated Leverage:	\$ 14,000





### **2018 Teacher Institute (ongoing)**

APNEP is working with the UNC Institute of the Environment and others partners to offer a teacher training institute during summer 2018. Approximately 20 public school teachers will be provided with curriculum training in earth and environmental sciences with hands-on activities, site visits, and specific content to support inquiry-based, experiential, and research-based instruction on estuarine and watershed resources. UNC Institute for the Environment has been the lead over the past few years, and in 2017 and 2018 has incorporated the Teacher Institute into a year-long professional development program called *ExPLORE NC*, which provides ongoing support and training for participants. APNEP expects this partnership to continue.

CCMP Components:	Engage
CCMP Actions:	D 2.1, 2.2, 2.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	25 teachers trained in environmental education, water quality, and watersheds
Intended Programmatic Outcome:	Increased environmental education activities in North Carolina schools
Status:	Scheduled for July 2018
Cost:	\$ 21,000
Estimated Leverage:	\$ 11,000

### **Shad in the Classroom 2017 (ongoing)**

APNEP is continuing to support this collaborative project that provides students with an understanding of the scientific process, an inspiration for careers in science, and a desire to protect our waterways through hands-on experience raising American shad from egg to releasable fry. This collaboration is led by the NC Museum of Natural Sciences with support from the NC Wildlife Resources Commission and the US Fish and Wildlife Service. The objective of this project is to build an understanding of the life history of shad and an appreciation for our natural world. Most activities occurred in March and April.

CCMP Components:	Engage, Restore
CCMP Actions:	D 2.1, 2.2, 2.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	Increased community involvement in water quality and habitat protection
Intended Programmatic Outcome:	Educational program, restoration activities
Status:	2017 activities completed
Cost:	\$ 24,000
Estimated Leverage:	\$ 11,000

### **Shad in the Classroom 2018 (ongoing)**

Continuation of the collaborative project continues to provide students with an understanding of the science process, an inspiration for careers in science, and a desire to protect our waterways through hands-on experience raising American shad from egg to releasable fry. This is a collaboration led by the North Carolina Museum of Natural Sciences. Classroom activities and releases will occur during spring 2018.

CCMP Components:	Engage
------------------	--------



CCMP Actions:	D2.1, D2.2, D2.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	Increased community involvement in water quality and habitat protection
Intended Programmatic Outcome:	Educational program, restoration activities
Status:	2018 activities in progress
Cost:	\$ 9,920
Estimated Leverage:	\$ 6,963

**Discover North Carolina’s River Basins Booklets and Posters**

APNEP provided funding to reprint educational booklets about the river basins of the Albemarle-Pamlico region. The materials were developed by the NC Office of Environmental Education and Public Affairs and are a popular teaching resource. The purpose of the effort is to illustrate the connections between people's everyday choices and the quality of natural resources as well as give citizens a sense of place within the natural environment.

CCMP Components:	Engage
CCMP Actions:	D2.3, D1.1, D1.5
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a
Intended Programmatic Output:	NC River basin booklets
Intended Programmatic Outcome:	Increased awareness and issue engagement
Status:	Complete
Cost:	\$5,000
Estimated Leverage:	\$7,000

**APNEP 2017 Symposium**

APNEP hosted a third APNEP-organized symposium in Raleigh during November 2017. This symposium featured a number of guest speakers, discussion panels, and various sessions to examine the status of the Albemarle-Pamlico estuarine system’s natural habitats and resources, discuss progress made, and discuss challenges ahead for protection and restoration of the region’s natural resources. Presentations from the symposium and past conferences are available [on the APNEP website](#).

CCMP Components:	Engage
Intended Programmatic Output:	Symposium
Intended Programmatic Outcome:	Elevated program profile, facilitation of working relationships among committees and partners.
Status:	Complete
Cost:	\$ 13,000
Estimated Leverage:	To be determined

**NOAA Planning & Facilitating Collaborative Meetings Workshop**

APNEP and many other organizations work using a collaborative process which relies on conducting meetings that engage multiple stakeholders. In recognition that the process is difficult and requires a high level of skill in order to be effective, APNEP and NOAA are teaming up to offer a training opportunity for APNEP partners to strengthen and refine their meeting facilitation skills. APNEP staff and partners will learn to design meetings that enhance problem solving and minimize conflict through a systematic approach. This course

provides the skills and tools to design and implement collaborative approaches. The skills will be useful even when attending, but not running, meetings.

CCMP Components:	Engage
CCMP Actions:	Objective D3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Workshop, educational materials, training
Intended Programmatic Outcome:	Facilitation of working relationships among teams, Committees, and partners, 25 trained facilitators
Status:	Scheduled for May 2018
Estimated Cost:	\$ 1,400 for related meeting expenses
Estimated Leverage:	\$ 2,000

**North Carolina Division of Water Infrastructure Projects** (Nonfederal Match - ongoing)  
APNEP is working with the N C Division of Water Infrastructure on projects to improve water quality through wastewater treatment upgrades within one or more of the APNEP river basins. The projects are used as part of the 1:1 non-federal match for the Section 320 / NEP grant.

CCMP Components:	Protect, Restore
CCMP Actions:	B1.1, B1.2, C1.5, C1.4
CCMP Outcomes:	1a, 1b, 1d, 2a, 2b, 3b, 3c, 3d
Intended Programmatic Output:	Pollution control measures, upgraded infrastructure, BMPs, stormwater retrofitting
Intended Programmatic Outcome:	Improve water quality
Status:	Ongoing
Estimated 320 Cost:	Staff Time
Estimated Leverage:	\$ 520,000
Status:	Ongoing
Estimated Cost:	Staff Time
Estimated Leverage:	\$ 520,000

**Submerged Aquatic Vegetation Monitoring** (ongoing)

APNEP continues to lead and support the monitoring of submerged aquatic vegetation (SAV) in the A-P region via various platforms, including remote sensing and boat-based protocols. Although originally targeted for aerial survey, this funding will be redirected to facilitate the establishment of new sentinel stations in areas not yet present and/or monitoring at established SAV sentinel stations.

CCMP Components:	Identify, Monitor
CCMP Actions:	A1.1,
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Map, report
Intended Programmatic Outcome:	New information for decision-makers
Status:	Project Pending
Estimated 320 Cost:	\$55,000
Estimated Leverage:	\$25,000



### **Survey of Submerged Aquatic Vegetation**

APNEP supported a boat-based SAV survey within the lower-salinity areas of the Sounds in a project with East Carolina University. The purpose of the survey was threefold: (1) to delineate the extent of SAV along shore-parallel transects (2) to use the data collected select 20 sentinel sites and establish a polygon size appropriate for long-term observation; and (3) to compare two types of SONAR data collected along some representative transects. Boat-based methods supplement remote-sensing efforts for detecting SAV, where turbidity and other environmental factors can limit detection.

CCMP Components:	Identify, Monitor
CCMP Actions:	A1.1
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Public outreach and involvement
Intended Programmatic Outcome:	CCMP Implementation, increased environmental awareness
Status:	Complete
Estimated 320 Cost:	\$ 6,476
Estimated Leverage:	\$ 56,451

### **VA-NC Memorandum of Understanding (new)**

In 2017, APNEP facilitated the development and signing of a Memorandum of Understanding (MOU) between the NC Department of Environmental Quality, NC Department of Natural and Cultural Resources, and Virginia Secretary of Natural Resources that will foster interstate collaboration within the Albemarle-Pamlico region to manage for healthy ecosystems and communities. The MOU replaces an earlier version signed in 2001. The MOU will assist NCDEQ, NCDNCR, and VADNR in coordinating with APNEP to improve the water quality and ecological health of the states' shared river basins flowing into Albemarle Sound. The MOU specifically calls for tackling regional issues such as nonpoint source pollution, restoring fish passage and spawning habitat, and controlling invasive species. Agencies will also explore opportunities to assist state, regional, and local governments in incorporating climate change and sea level rise considerations into their planning processes.

CCMP Components:	All
CCMP Actions:	All
CCMP Outcomes:	All
Intended Programmatic Output:	New partnerships and activities in VA and NC focused on protecting and restoring the region
Intended Programmatic Outcome:	Increased capacity to address CCMP implementation
Status:	Ongoing
Estimated 320 Cost:	Staff time for coordination efforts
Estimated Leverage:	To be determined

### **APNEP Engagement Strategy Update(ongoing)**

In 2017, APNEP updated its two-year Communications Strategy. The plan has been expanded to include partner engagement and education and outreach strategies, in addition to core communications efforts. APNEP implements this plan in furtherance of its mission and in accordance with its CCMP. Engagement efforts are prioritized according to input from the Management Conference, particularly via the Action Teams, and linked to CCMP objectives,



actions, and associated environmental outcomes. CCMP actions with engagement outputs have been identified in a matrix as part of the Engagement Strategy. The new strategy is posted on the APNEP website. Typically, costs for communications and outreach materials have been covered under the administrative budget for the program. Costs for targeted engagement materials will be budgeted on a case by case or by project basis.

CCMP Components:	Identify, Protect, Restore, Engage, Monitor
CCMP Actions:	All
CCMP Outcomes:	All
Intended Programmatic Output:	Increased partner engagement, targeted outreach and involvement
Intended Programmatic Outcome:	CCMP Implementation, increased environmental awareness, increase program awareness
Status:	Ongoing
Estimated Cost:	Staff time
Estimated Leverage:	To be determined

**Implementation Action Team: Oysters** (ongoing)

The NC Coastal Federation, which has been an active partner with APNEP and others in oyster restoration efforts since the late 1990’s, facilitates the Oyster Action Team. Members participating with this Action Team are pursuing initiatives aligned with both the 2015 North Carolina Oyster Blueprint and the CCMP. APNEP provided staff support for the development of a website, databases, and environmental indicators to support oyster restoration in the Albemarle-Pamlico region.

CCMP Components:	Restore, Monitor
CCMP Actions:	C5.1, C5.2, C5.3
CCMP Outcomes:	2b
Intended Programmatic Output:	Reports, recommendations, and restoration activities
Intended Programmatic Outcome:	Risk assessments, increased monitoring
Status:	Ongoing
Estimated Cost:	Staff time
Estimated Leverage:	\$12,000

**Implementation Action Team: Ecological Flows** (ongoing)

The Ecological Flows Action Team is focused on ecological flows issues in A-P region. This work entails identifying appropriate ecological flow requirements for the sounds and coastal rivers and working with regulatory partners to ensure in-stream flows are maintained. Also see Ecological Flows Action Team Project, below.

CCMP Components:	Identify, Protect, Engage
CCMP Actions:	A3.3, D3.2
CCMP Outcomes:	2a, 2b, 3a, 2b
Intended Programmatic Output:	Reports and recommendations
Intended Programmatic Outcome:	Risk assessments, increased monitoring
Status:	Ongoing
Estimated 320 Cost:	Staff time
Estimated Leverage:	\$2,000

### **Ecological Flows (Ecological Flows Action Team Project)**

This research was identified as an action item by the Ecological Flows Action Team during the 2016 meeting. The project will help to find, organize, and review currently available data that can help with ecological flow assessment in the region and identify data gaps. Identifying existing data and centralizing it will help material, personnel, and monetary resources to be efficiently distributed toward the ecological flow characterization efforts in the APNEP region.

CCMP Components:	Identify
CCMP Actions:	A3.3, D3.2, E2.2
CCMP Outcomes:	2a, 2b, 3a, 2b
Intended Programmatic Output:	Assessment of ecological flows data
Intended Programmatic Outcome:	Identify knowledge gaps associated with ecological flows
Status:	In Progress
Cost:	\$18,435
Estimated Leverage:	\$ 2,000

### **Implementation Action Team: Freshwater Habitat and Fish Passage (ongoing)**

This action team will work to assist CCMP implementation by identifying the potential need to complete the following action items: 1) Develop a comprehensive map of ditched and drained areas; 2) Map inland freshwater habitat; 3) Map anadromous fish spawning areas; 4) Create a list of dams that need passage; 5) Assess existing research related to dam removal; and 6) Review guidelines for culvert removal. The Freshwater Habitat and Fish Passage Action Team will leverage partnerships to complete assessments and identify knowledge gaps.

CCMP Components:	Protect, Restore
CCMP Actions:	B2.1, B2.4, B2.5, C4.1, C4.2, C4.3, C4.4
CCMP Outcomes:	2a, 2b
Intended Programmatic Output:	Assessment of freshwater habitat and fish passage
Intended Programmatic Outcome:	Identify knowledge gaps associated with freshwater habitat and fish passage
Status:	In Progress
Cost:	Staff time
Estimated Leverage:	To be determined

### **Implementation Action Team: Invasive Species (ongoing)**

This action team works to assist with CCMP implementation and identify the potential need to complete the following action items: 1) Develop a regional target list for aquatic invasive species by extracting appropriate elements from the 2015 North Carolina Aquatic Nuisance Species Management Plan and 2012 Virginia Invasive Species Management Plan; 2) Develop a regional target list for terrestrial invasive species by extracting appropriate elements from the 2012 Virginia Invasive Species Management Plan, the 2014 Virginia Invasive Plant Species List, and interviewing taxonomic specialists, including those in North Carolina and Virginia agencies; 3) Map presence of each target species where possible; 4) Assess risk both from established and species threatening to establish foothold; and 5) Manage risk by proposing new eradication projects for high-risk species, as well as building upon partner efforts. The Invasive Species Action Team will leverage partnerships to complete assessments and identify knowledge gaps.



CCMP Components:	Identify Protect, Restore, Engage
CCMP Actions:	A2.1, B2.6, C3.1, D1.3
CCMP Outcomes:	2c
Intended Programmatic Output:	Risk assessment and management of invasive species
Intended Programmatic Outcome:	Net increase of ecosystem services provided by native species
Status:	In Progress
Cost:	Staff time
Estimated Leverage:	To be determined

**Working Group Meeting on *Phragmites australis* in North Carolina**

APNEP provided support for a workshop facilitated by the North Carolina Coastal Federation that convened a working group meeting to discuss the state of *Phragmites australis*, an invasive aquatic plant, in North Carolina, as well as establish an ongoing working group to determine the next steps in *Phragmites* management. APNEP’s Program Scientist and Ecosystems Analyst attended and presented at this workshop.

CCMP Components:	Identify, Monitor, Protect, Restore
CCMP Actions:	A1.1, A2.1, C3.1, D1.2, D1.3, D3.1
CCMP Outcomes:	2b, 2c, 2d, 3d
Intended Programmatic Output:	Education and outreach materials, training, knowledge transfer
Intended Programmatic Outcome:	Increased coordination to address <i>Phragmites</i> issues in the Albemarle-Pamlico region
Status:	Complete
Cost:	\$2,450 and Staff time
Estimated Leverage:	\$35,000

**Implementation Action Team: Engagement & Stewardship (ongoing)**

APNEP facilitates an Engagement & Stewardship Action Team to implement assigned actions below from the CCMP and support its partners in their estuarine and watershed-focused education and outreach initiatives. The team has been meeting since 2015 and is currently working on developing inventories and mapping existing regional efforts relating to the [team's CCMP Actions](#) in order to identify who is working where and what gaps need to be filled in the region.

CCMP Components:	Engage
CCMP Actions:	D1.1, D2.1, D2.2, D2.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	Workshops and materials on stewardship and volunteer opportunities, increase in outdoor experiences, workshops and materials for educators, outreach and educational materials for public.
Intended Programmatic Outcome:	Increase in citizen action to protect and restore the Albemarle-Pamlico ecosystem, promote stewardship of the A-P system, increase in environmental education opportunities for adults and K-12 teachers,

	improved water quality, increased public awareness and engagement in CCMP implementation
Status:	In Progress
Estimated Cost:	Staff time
Estimated Leverage:	To be determined

**Implementation Action Team: Decision Support Tools (ongoing)**

This action team works to assist CCMP implementation by identifying the potential need to complete the following action items: 1) Develop a central database of web services; 2) Develop a central database of conservation management tools; and 3) Develop framework layers and sources necessary to assist CCMP implementation. This team had its kickoff meeting in June 2016 and is currently updating resources for APNEP and will be assisting other APNEP action teams with decision support tools needs or requirements.

CCMP Components:	Identify, Monitor
CCMP Actions:	A1.1, A1.2, A2.2, E2.1, E2.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	To be determined
Intended Programmatic Outcome:	To be determined
Status:	Ongoing
Estimated 320 Cost:	Staff Time
Estimated Leverage:	To be determined

**Implementation Action Team: Submerged Aquatic Vegetation (ongoing)**

Since preliminary discussions among its agency partners began in 2001, APNEP has supported a collaborative partnership that aims to promote the conservation of SAV along the entire coast of North Carolina and southeastern Virginia. While APNEP had been the lead facilitator of the partnership for most of the 2004-2013 decade, including its formalization through a memorandum of agreement in late 2006, APNEP fully inherited the partnership by forming an SAV Action Team and SAV Monitoring and Assessment Team during 2014. Given the high overlap in team participation thereafter, the two teams merged to form a “SAV Team” in early 2018.

CCMP Components:	Protect, Restore, Monitor
CCMP Actions:	B2.2, C3.3
CCMP Outcomes:	2a, 2b, 3d
Intended Programmatic Output:	To be determined
Intended Programmatic Outcome:	To be determined
Status:	Ongoing
Estimated Cost:	Staff time
Estimated Leverage:	To be determined

**Implementation Action Team: Contaminants /Nutrients (ongoing)**

The Contaminant Management Action Team was split into two workgroups during 2015. In 2015-2016, the Nutrient Workgroup shifted focus towards recommendations for appropriate nutrient standards for North Carolina’s estuaries as part of North Carolina’s Nutrient Criteria Development Plan using the Albemarle Sound as a pilot study area. Phase I of this pilot ended in 2016 and DEQ’s Scientific Advisory Committee and Criteria Implementation Committee





has taken the lead on nutrient criteria development during Phase II. The Contaminants Workgroup is developing risk assessments for metals and emerging contaminants. Also see “Albemarle Sound Nutrient Criteria Development” below.

CCMP Components:	Identify, Protect, Restore, Monitor
CCMP Actions:	A2.4, A2.5, C1.1, C1.2
CCMP Outcomes:	1a, 1b, 3b, 3c, 1d
Intended Programmatic Output:	Reports and recommendations
Intended Programmatic Outcome:	Risk assessments, increased monitoring
Status:	Ongoing
Estimated Cost:	Staff time
Estimated Leverage:	To be determined

**Albemarle Sound Nutrient Criteria Development**

APNEP led an effort to review the nutrient criteria that protect our estuaries under the Clean Water Act. This review was conducted by an interdisciplinary working group in close partnership with the NC Division of Water Resources (DWR), the U.S. Environmental Protection Agency, and other partners as part of the North Carolina Nutrient Criteria Development Plan. With an initial focus on Albemarle Sound, the committee has forwarded lessons learned over NC DWR as part of its state wide Nutrient Criteria Development Plan. In January 2018, DWR released a draft report with recommendations which is currently under review by members of the Scientific Advisory Committee. (Also see **Implementation Action Team: Contaminants /Nutrients**)

CCMP Components:	Restore
CCMP Actions:	C1.1, C1.2
CCMP Outcomes:	1a, 1b, 1d, 3b, 3c
Intended Programmatic Output:	Recommendations to NC DWR for nutrient criteria for Albemarle Sound
Intended Programmatic Outcome:	Maintain & restore good water quality
Status:	APNEP portion completed, NCDEQ effort ongoing
Estimated 320 Cost:	\$400 (meeting support), staff time
Estimated Leverage:	\$3,900

**Watershed Field Coordinator - Virginia (ongoing)**

The APNEP Watershed Field Coordinator for Virginia provides coordination and support to APNEP, NCDEQ and the Virginia DEQ to enhance CCMP implementation in the Roanoke, Chowan and Pasquotank river basins. APNEP supported one-half of this position for at least 20 hours per week. The final year of direct funding support from APNEP was 2014. Virginia DEQ will continue to partner with APNEP without funding from APNEP. The position has been vacant for the duration of this year, however it is currently in the hiring process.

CCMP Component:	All
CCMP Actions:	All
CCMP Outcome:	All
Programmatic Output:	Program administration, reports, leverage, presentations
Programmatic Outcome:	CCMP implementation and program support
Status:	Ongoing

Estimated Cost: Staff time  
Estimated Leverage: \$ To be determined

### **Neuse River Estuary Modeling and Monitoring Project**

ModMon is a collaborative effort between the University of North Carolina and the North Carolina Department of Environmental Quality. It supports North Carolina's needs for space and time-intensive monitoring and assessment of water quality and environmental conditions; including nutrient-eutrophication dynamics, algal blooms, hypoxia, fish kills and related issues. ModMon is the main source of data for calibration, verification and validation of water quality models being used to adaptively test and manage the Total Maximum Daily Load (TMDL) for the Neuse River Estuary (NRE). ModMon also serves State and federal agencies as a ground-truthing data source for aircraft and satellite-based remote sensing of chlorophyll, turbidity and harmful algal blooms. This project began in June 2014. (5371)

CCMP Components: Identify, Monitor  
CCMP Actions: A1.1, A2.2, A3.1, E1.2, E2.1  
CCMP Outcomes: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d  
Intended Programmatic Output: Report and recommendations, monitoring support to NC DWR  
Intended Programmatic Outcome: Greater understanding of environmental condition  
Status: Complete (*Project still running w/o APNEP funds*)  
Cost: Staff Time  
Estimated Leverage: \$200,000

### **Graduate Fellowship in Estuarine Research 2016**

APNEP and the North Carolina Sea Grant (NCSG) College Program continued joint support of the Graduate Fellowship in Estuarine Research established in 2015. The fellowship provided funding for a graduate student based in North Carolina and Virginia with an opportunity to conduct applied research within the North Carolina portion of the APNEP management boundary. Fellows must conduct research that addresses focus areas identified in NCSG Strategic Plan and management actions identified in CCMP.

CCMP Components: Protect, Restore, Engage  
CCMP Actions: B2.2, C3.3, D2.1  
CCMP Outcomes: 2a, 2b  
Intended Programmatic Output: Report, maps, data  
Intended Programmatic Outcome: Identification of new restoration and protection techniques for Submerged Aquatic Vegetation/ Increased capacity to address CCMP implantation actions  
Status: In Progress  
Cost: \$5,000  
Estimated Leverage: \$5,000

### **Graduate Fellowship in Estuarine Research 2017 (ongoing)**

APNEP and the North Carolina Sea Grant (NCSG) College Program continued joint support of the Graduate Fellowship in Estuarine Research established in 2015. The fellowship provided funding for a graduate student based in North Carolina and Virginia with an opportunity to



conduct applied research within the North Carolina portion of the APNEP management boundary. Fellows must conduct research that addresses focus areas identified in NCSG Strategic Plan and management actions identified in CCMP.

CCMP Components:	Identify, Protect, Restore, Engage
CCMP Actions:	A2.1, B2.6, C3.1, D1.3, D2.1
CCMP Outcomes:	2a, 2b, 2c, 3d
Intended Programmatic Output:	Report, maps, data
Intended Programmatic Outcome	Increased understanding of how invasive species change marsh ecosystem function/ Increased capacity to address CCMP implantation actions
Status:	In Progress
Cost:	\$5,750
Estimated Leverage:	\$5,000

**Effects of Environment on Blue Crab Size: Fisheries Science, Place-Based Learning, and a Reciprocal Transplant Growth Study**

This research and education project informs decisions by managers at Mattamuskeet National Wildlife Refuge as they manage the flow of water in and around the lake. This is a place-based STEM educational opportunity with Lake Mattamuskeet schools located three miles from optimal recreational crabbing locations on the lake. The requested funds were matched by other grant funds and used specifically to meet a fisheries interest in determining the weight as well as size in adult male and female crabs in the lake. Local high school students made bimonthly trips to the Lake, catch crabs, take pictures of crabs, weigh individuals and generate data on gender, size and weight of crabs over the active season. A teacher workshop was also held.

CCMP Components:	Identify, Engage
CCMP Actions:	D2.1, D2.2
CCMP Outcomes:	1c, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	Report and recommendations
Intended Programmatic Outcome:	Increased awareness and engagement
Status:	Complete
Cost:	\$4,000
Estimated Leverage:	\$4,000

**NC Division of Marine Fisheries Recreational Water Quality Monitoring (ongoing)**

APNEP continues to provide bridge funding to the NC Division of Marine Fisheries’ Recreational Water Quality Monitoring Program for the continuation of water quality monitoring near recreational areas. The program tests bacterial concentrations in coastal recreational waters to protect public health. The program is responsible for notifying the public when bacteriological standards for safe bodily contact have been exceeded. The program also has an educational component that accompanies the testing. Their educational campaign informs the public how bacteria enter coastal waters and actions that can help prevent it.

CCMP Components:	Monitor, Engage
CCMP Actions:	D2.3, E1.1, E2.1, E2.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Monitoring data

Intended Programmatic Outcome: CCMP Implementation, integrated monitoring strategy  
 Status: In progress  
 Cost: \$ 9,000 (extended and renewed for another year) total \$19,00  
 Estimated Leverage: \$ 283,000

**Sound Economic Development: Creating A Rising Economic Tide for the NC Coast (Oyster Action Team)**

The summit convened key stakeholders, practitioners, elected and appointed officials and academia and businesses to discuss opportunities for oyster and coastal environmental restoration as an economic development strategy for North Carolina. The summit assembled state and local leaders to review a newly developed strategy, share progress and determine next strategic steps. Participants learned about efforts in neighboring states and North Carolina and to promote a strategic economic and environmental vision for coastal communities. NC Coastal Federation was the lead partner in the event.

CCMP Components: Restore, Engage  
 CCMP Actions: C1.5, C5.1, C5.2, C5.3, D3.1  
 CCMP Outcomes: 1a, 1b, 1d, 1e, 2a, 2b, 3a, 3c, 3d  
 Intended Programmatic Output: Increased community involvement and informed decision-making  
 Intended Programmatic Outcome: Knowledge transfer, community involvement, increased awareness of environmental services  
 Status: Complete  
 Cost: \$ 4,000  
 Estimated Leverage: \$16,000

**WRI Annual Conferences 2017 & 2018**

APNEP provided support to the 2017 and 2018 WRI annual conferences that has been the premier conference highlighting diverse topics in water research, management and policy in North Carolina. The conference features oral and poster presentations, themed panel discussions, ample networking opportunities, and hands-on interactive sessions for more in-depth discussions and problem solving related to water resources. Attendance and sponsorship allows APNEP to raise visibility of the partnership, grow our network of partners, and engage in targeted discussions about water resources and water quality issues, wetland & hydrologic restoration, fish habitat & fish passage, ecological flows, and coastal resilience.

CCMP Components: Identify, Engage  
 CCMP Actions: A2.2, D1.1, D1.2, D2.2, D2.3, D3.1  
 CCMP Outcomes: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d  
 Intended Programmatic Output: Problem solving and collaboration for decision-makers  
 Intended Programmatic Outcome: Knowledge transfer, increased awareness, and engagement  
 Status: Complete  
 Cost: \$2,250  
 Estimated Leverage: \$4,000

### **2017 North Carolina Coastal Conference**

Conference support to North Carolina Sea Grant in addressing the state's urgent and long-term needs in ocean, coastal and watershed resource management. The conference addressed critical issues including weather, storms, and climate; community and ecosystem health; fisheries and aquaculture; and planning and economics. Attendance and sponsorship allows APNEP to raise visibility of the partnership, grow our network of partners, and engage in targeted discussions about water resources and water quality issues, wetland & hydrologic restoration, fish habitat & fish passage, ecological flows, and coastal resilience.

CCMP Components:	Identify, Engage
CCMP Actions:	A2.2, D1.1, D1.2, D2.2, D2.3, D3.1
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Problem solving and collaboration for decision-makers
Intended Programmatic Outcome:	Knowledge transfer, increased awareness, and engagement
Status:	Complete
Cost:	\$500
Estimated Leverage:	\$12,000

### **Low Impact Development Stormwater Strategies**

River City Community Development Corporation will collaborate with APNEP, the North Carolina Coastal Federation, and community partners to incorporate Low Impact Development (LID) stormwater management designs and permitting into its new proposed 18-unit multi-family supportive housing development. The collaboration offers a unique opportunity to incorporate sound stormwater management into a housing project for veterans and special needs individuals within Elizabeth City and Northeastern North Carolina. The stormwater design for the new housing development will include LID measures to prevent polluted runoff from reaching surface waters.

CCMP Components:	Restore, Engage
CCMP Actions:	C1.5, D1.1, D1.2, D2.2, D3.1
CCMP Outcomes:	1a, 1b, 1d, 1e, 2a, 2b, 2c, 3a, 3c, 3d
Intended Programmatic Output:	Improved stormwater management strategies
Intended Programmatic Outcome:	Knowledge transfer, improved restoration and management techniques
Status:	In Progress
Cost:	\$15,000
Estimated Leverage:	\$20,000

### **College Campus Stormwater Impact and Needs Assessment**

APNEP is providing funds for Sound Rivers, Inc., to conduct a stormwater impact and needs assessment for six college campuses in the Tar-Pamlico and Neuse River basins, including Vance Granville Community College (four campuses), NC Wesleyan College, and Nash Community College. As a portion of each assessment, stormwater BMPs will be recommended. Topographic maps, on-site field surveys, soil cores, and existing campus master plans will be utilized to complete the assessment for each campus.



CCMP Components:	Identify, Engage
CCMP Actions:	B1.1, C1.5, D1.4, D2.2
CCMP Outcomes:	1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b, 3c, 3d
Intended Programmatic Output:	Final report for each campus outlining areas of concern and campus needs, educational materials and suggested outdoor classroom lessons, ranking matrix to suggest order of BMP implementation for future work
Intended Programmatic Outcome:	Increased knowledge of BMP's and needs at each campus; opportunities to implement BMPs and improve stormwater impacts on campuses and surrounding areas
Status:	In Progress
Cost:	\$19,500
Estimated Leverage:	\$9,670

### **Swim Guide Program**

APNEP is funding Sound Rivers, Inc. (SRI), to initiate Swim Guide, a regional, citizen science water quality monitoring program. The SRI Swim Guide Program will fill a void in water quality monitoring, identifying sites on the Neuse and Tar-Pamlico rivers not currently monitored by NC DMF-Recreational Water Quality Program. The funds will be used to purchase monitoring equipment and sampling supplies, fund intern stipends, and train our citizen science volunteers. Swim Guide will engage and educate the community, help to identify sources of and eliminate bacteria pollution, and notify the public of health concerns when using the Neuse and Tar-Pamlico rivers and streams to boat, fish, or swim. By organizing this community-oriented, volunteer-driven water monitoring program, Sound Rivers will empower Eastern North Carolina residents to participate in stream monitoring, be active in restoration, and most importantly, notify the public of health concerns.

CCMP Components:	Identify, Monitor, Engage
CCMP Actions:	D1.1, D2.1, D2.3, D3.1, E1.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Monitoring equipment, sampling supplies, funding for intern stipends, training for citizen science volunteers.
Intended Programmatic Outcome:	Monitoring data, increased understanding of water quality issues in eastern North Carolina, increased community knowledge and engagement
Status:	In Progress
Cost:	\$ 9,500
Estimated Leverage:	\$14,304

### **Scientific Research and Education Network 2017 and 2018**

The Scientific Research and Education Network (SciREN) connects educators with research scientists to provide learners with relevant learning experiences. In 2017, APNEP developed a new lesson plan entitled "Food Chain Frenzy". In 2017 and 2018, APNEP and SciREN reached more than 500 teachers at events held in the Triangle, Greenville, and at the coast to



demonstrate newly developed lesson plans, offer enrichment materials for their classrooms, and highlight other opportunities for teachers including our searchable lesson plan database and other professional development opportunities.

CCMP Components:	Engage
CCMP Actions:	D2.2
CCMP Outcomes:	1c, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	Lesson plans
Intended Programmatic Outcome:	Engaged educational community
Status:	Complete
Cost:	\$200 travel cost & staff time
Estimated Leverage:	\$1,200

### **NC Coastal Envirothon 2017 and 2018**

APNEP participated in the North Carolina Coastal Envirothon, which brought students, educators and environmental professionals from 28 coastal counties together to test their knowledge of environmental topics in North Carolina. APNEP staff led a presentation on “Current Environmental Issues” for middle school students from across eastern North Carolina, as well as providing test feedback for the State Envirothon in 2018. The NC Coastal Envirothon is held annually at the Cool Springs Environmental Education Center in New Bern, NC.

CCMP Components:	Engage
CCMP Actions:	D2.2
CCMP Outcomes:	1c, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	Public outreach and involvement
Intended Programmatic Outcome:	Increased environmental awareness
Status:	Complete
Cost:	Staff time
Estimated Leverage:	\$1,200

### **Kid’s River Fest 2017 & 2018**

APNEP provided sponsorship for Kid’s River Fest by providing funds for a mobile planetarium and mobile aquarium to be used for environmental education programs during the two events. The Kid’s River Fest is held in Kinston and Greenville, NC, in spring 2018 and fall of 2017.

CCMP Components:	Engage
CCMP Actions:	D2.1, D2.3
CCMP Outcomes:	1a, 1b, 1d, 2a
Intended Programmatic Output:	Environmental education programming
Intended Programmatic Outcome:	Increased community knowledge and engagement
Status:	In progress
Cost:	\$1,000
Estimated Leverage:	\$2,000

### **Integrated Monitoring Strategy (ongoing)**

APNEP continues to facilitate the establishment of an integrated monitoring strategy to detect, measure, and track changes in the ecosystem. Much preparatory work has already been conducted by the APNEP resource monitoring and assessment teams, and these teams’



contributions will be essential to complete the strategy. Upon completion, the strategy will provide resource managers and other partners with cost and information quality (uncertainty) alternatives that will facilitate the selection of a set of monitoring protocols to be included in the APNEP integrated monitoring plan.

CCMP Component(s):	Monitor
CCMP Actions:	E1.1, E1.2, E1.3, E2.1, E2.2
CCMP Outcomes:	Integrated monitoring strategy
Intended Programmatic Output:	Document, functional workgroups
Intended Programmatic Outcome:	Integrated monitoring strategy to support ecosystem-based management through the CCMP
Status:	In progress
Cost:	Staff Time
Estimated Leverage:	To be determined

### **Twelve Hawks Habitat Enhancement**

APNEP purchased over 4,000 tree seedlings to reforest 12 acres of hayfields on the 40-acre Twelve Hawks Tract located along Fishing Creek in Griffins Township, Nash County, NC, in partnership with the Tar River Land Conservancy (TRLC), NC Forest Service, and NC Clean Water Management Trust Fund. TRLC and Forest Service personnel recruited volunteers and provide onsite training and equipment to ensure that trees are planted at the right spacing and soil depth. This project will contribute towards the long-term protection and enhancement of natural riparian buffers along 3,680 feet of bank of Fishing Creek.

CCMP Components:	Protect, Restore, Engage, Monitor
CCMP Actions:	B1.3, B2.3, D1.1, D1.2
CCMP Outcomes:	1a, 1b, 1d, 1e, 2a, 2b, 2c, 3b, 3d
Intended Programmatic Output:	Tree planting, habitat enhancement, volunteerism
Intended Programmatic Outcome:	Habitat restoration, increased awareness
Status:	Complete
Cost:	\$ 3,724
Estimated Leverage:	\$ 2,000

### **Chowan Healthy Waters Initiative (ongoing)**

APNEP worked with a bi-state team composed of representatives led by Virginia's Department of Conservation and Recreation, Virginia Commonwealth University, the NC Natural Heritage Program, and the NC Division of Water Resources to identify and protect the healthiest waters and watersheds of the Chowan River Basin. Identification of these pristine waters is a necessary first step in the ultimate preservation of these valuable areas by land trusts and other organizations. This work included surveys of rivers and streams throughout the Chowan Basin, as well as the integration of available data from both states. Reports from this effort were released in 2017, and efforts are underway to secure grant funding to develop the capacity to implement the recommendations in the plan by piloting a conservation and protection program in the Upper Chowan River Basin.

CCMP Components:	Identify, Protect, Engage
CCMP Actions:	A1.1, B3.2, D1.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	MOU Implementation, interstate collaboration





Intended Programmatic Outcome:	Protect high quality waters
Status:	Ongoing
Cost:	Staff Time
Estimated Leverage:	To be determined

**Albemarle-Chowan Watershed Roundtable** (ongoing)

The Albemarle-Chowan Watershed Roundtable (ACWRT) engages stakeholders in the Virginia portions of the Chowan and Pasquotank River basins to collaborate on issues concerning water quality, habitat, and other natural resources within these watersheds. The ACWRT is currently on hold; meetings were suspended in May 2017. However, APNEP has led efforts to continue communications with group members and initiate interstate coordination regarding the blooms that have been occurring in the lower Chowan since 2015. APNEP has been working closely to connect NC Division of Water Resources Basin Planning staff, who are currently preparing updates to the basin plans for this area, with contacts in the VA portion of the basins.

CCMP Components:	Engage
CCMP Actions:	D1.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	MOU Implementation, interstate collaboration
Intended Programmatic Outcome:	Restore and maintain good water quality
Status:	In progress
Cost:	Staff Time
Estimated Leverage:	To be determined

**Chowan Algal Blooms Workgroup (new)**

A regional stakeholder workgroup has been convened to improve coordination, response, and communication to the public during algal blooms. The group has been working to improve coordination between NC Department of Environmental Quality and the NC Department of Health and Human Services, given their different jurisdictions over human and environmental health at state and local levels, while leveraging assistance from local entities. Partners have also held several information forums for the general public and elected officials. With support from APNEP and other partners, the Albemarle Commission secured a planning grant from the NC Clean Water Management Trust Fund to study the causes of the blooms and develop strategies for short- and long-term response.

CCMP Components:	Protect, Restore, Engage
CCMP Actions:	B1.1, C1.1, C1.2, D2.3
CCMP Outcomes:	1a, 1b, 1d, 2b, 3b, 3c
Intended Programmatic Output:	Coordinated contaminant management strategies
Intended Programmatic Outcome:	Restore water quality
Status:	Ongoing
Cost:	Staff Time
Estimated Leverage:	To be determined

**Microcystin Test Kits**

APNEP provided funds to the NC Division of Water Resources for the purchase of test kits that will enable the Division to conduct rapid-response testing of recreational waters in the

lower Chowan River and western Albemarle Sound for signs of potential Harmful Algal Blooms (HABs). These tests will allow the Division to more quickly identify samples that need priority lab processing and help the NC Department of Environmental Quality to more quickly provide citizens with information and updates about HABs in their local waterways. Also see projects “Chowan Algal Blooms Workgroup” and “Albemarle-Chowan Watershed Roundtable”.

CCMP Components:	Protect, Restore, Engage
CCMP Actions:	B1.1, C1.1, C1.2, D2.3
CCMP Outcomes:	1a, 1b, 1d, 2b, 3b, 3c
Intended Programmatic Output:	Monitoring data
Intended Programmatic Outcome:	Increased knowledge and rapid response to algal blooms in the Albemarle-Pamlico region.
Status:	Complete
Cost:	\$505
Estimated Leverage:	To be determined

**Saltwater Connections** (ongoing)

Saltwater Connections is a regional initiative aimed at sustaining livelihoods, cultural heritage, and natural resources along the coast, from Hatteras Island to Ocracoke and Carteret County. The Saltwater Connections Resource Team’s approach to growing sustainable communities is modeled after Handmade in America’s Small Town Revitalization Program, an asset-based economic development project in western North Carolina. The goal for this community vitalization process is to leverage assets, whether cultural, architectural or human, in order to build a complete community vitalization plan. APNEP participated in a community collaboration project funded through NC Sea Grant highlighting the twentieth anniversary of the 1997 NC Fisheries Reform Act. Jimmy Johnson served as a co-principal investigator on project, which features interviews with 13 people including fishermen, scientists, resource managers, elected officials, and environmental advocates instrumental in developing and implementing the legislation. The project, which includes audio excerpts from the interviews featured in a narrated series of podcasts, was released in spring 2017. APNEP participated in panel discussions at a summit held in September and served as an exhibitor at the event.

CCMP Components:	Engage
CCMP Actions:	D1.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	To be determined
Intended Programmatic Outcome:	To be determined
Status:	In progress
Cost:	Staff Time
Estimated Leverage:	To be determined

**Watershed Restoration and Improvement Team** (ongoing)

The Watershed Restoration and Improvement Team (WRIT) is a working group composed of experts from the NC Department of Environmental Quality, the NC Department of Agriculture and Consumer Services, and the NC Wildlife Resources Commission. Its mission is to "strengthen partnerships in order to enhance each agency’s ability to carry out its own water-related goals and activities to improve watershed functions throughout North Carolina." The



team provides a forum for managers to share insights and work collaboratively on watershed issues. The team has also focused restoration efforts in four sub-watersheds in North Carolina, including one in the Roanoke River basin. In 2017, the team built the foundation and network for information sharing regarding funding sources for restoration and water quality improvement activities. Team members also worked closely together to assist with the Chowan Algal Blooms Workgroup (see earlier project).

CCMP Components:	Engage, Protect, Restore
CCMP Actions:	C2.1, D1.2, also supports B1.3, B1.4, B1.5, C1.3
CCMP Outcomes:	1a, 1b, 1c, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	To be determined
Intended Programmatic Outcome:	To be determined
Status:	In progress
Cost:	Staff Time
Estimated Leverage:	To be determined

### **North Carolina Watershed Stewardship Network (ongoing)**

The Watershed Stewardship Network (WSN) is a working group that includes representatives from state and local government, academic institutions, non-profit organizations, and private industry. The mission of the WSN is to empower more effective watershed stewardship because water is critical to economic, environmental, and community health. The purpose of the group is to identify, include, link, and serve watershed stakeholders in North Carolina. In 2017, APNEP staff assisted with planning for a series of workshops on “Sustainably Funding your Watershed Efforts” and presented at the workshop held in the APNEP region.

CCMP Components:	Engage
CCMP Actions:	D1.1, D1.2, D2.2, D2.3, D3.1
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Workshops, online tools, environmental programs
Intended Programmatic Outcome:	Improved environmental stewardship and watershed health
Status:	In progress
Cost:	Staff Time
Estimated Leverage:	To be determined

### **CCMP/Monitoring and Assessment Workshops**

A series of workshops were structured to develop priorities among scientists, managers, policy makers, and citizens on how ecological monitoring should be targeted to best support APNEP indicator tracking of CCMP ecosystem outcomes. This project was placed on hold pending completion of the first phase of indicator development, including target values. The teams were reinitiated in 2017 and are currently in the process of narrowing down a list of potential indicators to monitor system-wide.

CCMP Component:	Monitor
CCMP Actions:	E1.1, E1.2, E1.3, E2.1, E2.2
CCMP Outcome:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Indicators, Integrated Monitoring Strategy
Intended Programmatic Outcome:	Detection of environmental changes in support of CCMP implementation



Status:	In Progress
Cost:	Staff Time / meeting expenses
Estimated Leverage:	Pending

**Wetlands Monitoring**

APNEP has supported a NC State University effort to sustain North Carolina’s wetland monitoring program after its discontinuation by the State of North Carolina. APNEP provided an initial support letter for this funded grant and has committed to supporting the effort through the promotion of wetland partnerships, service on the project’s technical working group, and assistance with monitoring efforts in the APNEP region.

CCMP Components:	Monitor
CCMP Actions:	A1.1, E1.1
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Data, report, maps
Intended Programmatic Outcome:	Greater understanding of environmental condition
Status:	Complete
Cost:	Staff Time
Estimated Leverage:	\$568,951 over three years

**Hyde County Resilience Planning**

APNEP provided support for an effort led by NC Sea Grant, Georgia Sea Grant, and Stetson University in Hyde County, NC to develop a community resilience and adaptation plan. Hyde County has sought the team’s expertise on topics including coastal flooding and storm resilience.

CCMP Components:	Identify, Engage
CCMP Actions:	A2.2, A2.3, D1.2, D3.1, D3.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Report and recommendations
Intended Programmatic Outcome:	Higher community resilience
Status:	In Progress
Cost:	Staff Time
Estimated Leverage:	\$35,000

**Defense/Coastal Estuarine Research Program (DCERP)**

APNEP has participated on the Regional Coordinating Committee for the Defense/Coastal Estuarine Research Program (DCERP) since the committee’s inception in 2007. The DCERP was designed to conduct mission-relevant and basic and applied research in support of an ecosystem-based approach. The Department of Defense’s Strategic Environmental Research and Development Program (SERDP) launched DCERP at Camp Lejeune, NC, because of it being an ideal research platform with a location that integrates coastal barrier island, estuarine, marsh, and terrestrial ecosystems. These common ecosystems within the APNEP region make probable that insights gained from this 10-year program should provide many useful applications for the APNEP region as well. A DCERP symposium in Raleigh during October 2017 marked the end of the program. APNEP staff are exploring ways to integrate the findings with the new Sentinel Landscape Partnership (see below).

CCMP Components:	Identify, Monitor
------------------	-------------------

CCMP Actions:	A2.2, A2.3; E2.1, E2.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Staff knowledge and research partner development
Intended Programmatic Outcome:	Technical transfer of DCERP protocols for monitoring, modeling, and decision support frameworks
Status:	Complete
Cost:	Staff Time
Estimated Leverage:	To be determined

### **Sentinel Landscape Partnership (new)**

As part of the North Carolina Sentinel Landscape Partnership, 33 eastern counties in North Carolina were federally designated as Sentinel Landscapes. Of these, 24 counties are located in the Albemarle-Pamlico watershed. Stemming from a joint federal partnership between the U.S. Departments of Agriculture, Interior and Defense, Sentinel Landscape designations are being established around the country to preserve conservation lands, working farmland, and forests that are adjacent to military training grounds. The partnership will benefit national security efforts while complementing efforts to preserve working agricultural and forest lands and restore and protect habitats. APNEP staff have been participating in meetings and providing letters of support for the partnership to secure grant funding. In 2017, the Department of Defense's *Readiness and Environmental Protection Integration (REPI)* Program awarded \$9.2 million that attracted nearly \$10.1 million in non-DoD partner funding to the Eastern North Carolina Sentinel Landscape Partnership.

CCMP Actions:	B2.3, D1.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	New incentives for land protection. Workshops and engagement materials on land conservation. Staff knowledge and partner development.
Intended Programmatic Outcome:	Increase in acres of protected lands through easements, better management, or other methods.
Status:	Ongoing
Cost:	Staff Time
Estimated Leverage:	To be determined

### **NC Coastal Habitat Protection Plan Implementation Support**

The NC Coastal Habitat Protection Plan (CHPP), adopted by the Coastal Resources, Environmental Management and Marine Fisheries Commissions, has seen routine development since its implementation began in 2004. While differences in scope, geography and mission exist, implementation of CCMP and the CHPP are complimentary. Jimmy Johnson, APNEP Coastal Habitats Coordinator ensures that both plans are implemented in a coordinated and integrated fashion. A new CHPP implementation plan and updated scientific support documents were produced in 2015-16.

CCMP Components:	Identify, Protect, Restore
CCMP Outcomes:	1a, 1b, 1c, 1d, 2a, 2b, 2c, 3b, 3c, 3d
Intended Programmatic Output:	CHPP annual report



Intended Programmatic Outcome:	Coordinated regulation across NC state agencies to improve estuarine habitats
Status:	In Progress
Cost:	Staff Time
Estimated Leverage:	\$16,000

**Atlantic Coastal Fish Habitat Partnership (ACFHP)**

APNEP is member of ACFHP, a coast-wide partnership of fish habitat resource managers, scientists, and non-governmental agencies on the eastern seaboard who have established a commitment to work together for the benefit of aquatic resources. The mission of ACFHP is to accelerate the conservation, protection, restoration, and enhancement of habitat for native Atlantic coastal, estuarine-dependent, and diadromous fishes through partnerships between federal, tribal, state, local, and other entities. ACFHP is part of the National Fish Habitat Partnership and funded through the USFWS. In September 2017, APNEP’s Ecosystem Analyst participated in a two-day workshop in Arlington, VA for the ACFHP Science & Data Committee, to review and recommend variables and metrics for ACFHP’s Southeast Mapping Prioritization Project, a spatial prioritization of diadromous, estuarine, and coastal fish habitat along the southeast U.S. APNEP staff and partners were also a large contributor to the 2017 *Habitat Hotline*. The widely distributed publication is a work of the Habitat Committee of the Atlantic State Marine Fisheries Commission (ASMFC). The 2017 *Habitat Hotline* focused on submerged aquatic vegetation (SAV) and recognized the leadership role that NC and APNEP have played in the restoration, and enhancement of SAV along the east coast.

CCMP Components:	Restore
CCMP Actions:	C4.1, C4.2, C4.3, C4.4
CCMP Outcomes:	2a, 2b
Intended Programmatic Output:	Habitat restoration, Article December 2017 “Habitat Hotline Atlantic”
Intended Programmatic Outcome:	Improved partner coordination
Status:	In Progress
Cost:	Staff Time
Estimated Leverage:	To be determined

**Southeast Aquatic Resource Partnership (SARP)**

APNEP is a member of the SARP Steering Committee and the SARP Coastal Workgroup. The Southeast Aquatic Resources Partnership is a regional collaboration of natural resource and science agencies, conservation organizations and private interests developed to strengthen the management and conservation of aquatic resources in the southeastern U.S. SARP’s mission is to protect, conserve and restore aquatic resources including habitats throughout the Southeast for the continuing benefit, use and enjoyment of the American people. SARP, like ACFHP, is funded through the National Fish Habitat Partnership. SARP works to implement the goals of the National Fish Habitat Action Plan in some of the U.S.’s most ecologically and economically significant watersheds. Regionally, SARP works with partners in 14 states in the Southeast to conduct science-based watershed and habitat assessments that collectively identify regional conservation priorities. SARP works with communities to facilitate locally-driven conservation projects that bring together partners and funding to help meet regional



priorities. SARP also receives funding from its member states through the [Southeastern Association of Fish and Wildlife Agencies](#).

CCMP Components:	Restore
CCMP Actions:	C4.1, C4.2, C4.3, C4.4
CCMP Outcomes:	2a, 2b
Intended Programmatic Output:	Potential funding for APNEP partners working on restoration initiatives; closer working ties with neighboring states
Intended Programmatic Outcome:	Improved partner coordination,
Status:	In Progress
Cost:	Staff Time
Estimated Leverage:	To be determined

### **Coastal Discovery Camp 2017**

A project in partnership with the NC Coastal Federation, the Coastal Discovery Camps are summer enrichment programs that introduce students to the wonders of our coast through outdoor, hands-on learning. The program consists of two, three-day camps, which allow elementary-aged students to continue learning even after the school year is complete. Students involved in the programs will leave with a better understanding of coastal sciences through activities led by coastal professionals, park rangers and scientists. The outdoor experiential learning components will allow students to connect with nature and strengthen environmental literacy skills. New knowledge gained through hands-on activities will encourage students to become better stewards of the coast.

CCMP Components:	Engage, Monitor
CCMP Actions:	D 1.1, 1.5, 2.1, 2.3
CCMP Outcomes:	1a, 1b, 1d, 1e, 2a
Intended Programmatic Output:	Educational program
Intended Programmatic Outcome:	Knowledge transfer, public outreach & involvement, increased environmental awareness
Status:	Complete
Cost:	\$3,885
Estimated Leverage:	\$1,492

### **Watershed and Water Quality Planning Workshop**

APNEP provided support for a workshop led by the NC Coastal Federation and NC Watershed Stewardship Network. Workshop participants learned how to protect and restore coastal water quality with cost-effective watershed management strategies, featuring tools and strategies for setting quantifiable goals for reducing the volume of polluted stormwater runoff, how to strategically select the most effective best management practices to achieve water quality goals and engage coastal communities in this effort.

CCMP Component:	Identify, Protect, Engage
CCMP Actions:	B1.1, B1.2, C1.1, C1.2
CCMP Outcome:	1a, 1b, 1d, 2b, 3b, 3c, 3d
Intended Programmatic Output:	Pollution control measures, BMPs, coordinated contaminant management strategies
Intended Programmatic Outcome:	Improved water quality

Status: Complete  
 Cost: \$ 500  
 Estimated Leverage: \$ 2,000

**Marine Planning Process Workshop**

APNEP provided sponsorship for a Marine Planning Process Workshop facilitated by the NC Coastal Reserve and National Estuarine Research Reserve and led by Duke University. Marine and coastal resource managers are challenged to address key ocean challenges, give states and communities greater input in governmental decisions, streamline federal and international decision-making, save taxpayer dollars, and promote economic growth. Marine planning is a key tool to achieve these goals. While there is a wealth of information describing the need for marine planning, including the U.S. National Ocean Policy, few resources exist on how to conduct marine planning in detail. In response, a team of marine planning professionals developed an accelerated short course for coastal decision makers.

CCMP Components: Engage  
 CCMP Actions: Multiple  
 CCMP Outcomes: Multiple  
 Intended Programmatic Output: Workshops, educational program  
 Intended Programmatic Outcome: Knowledge transfer, public outreach & involvement, increased environmental awareness  
 Status: Complete  
 Cost: \$500  
 Estimated Leverage: \$1,200

**Non-320 Funds: Sentinel Network Monitoring of Submerged Aquatic Vegetation in Roanoke and Neuse River Watersheds (NC) | (ongoing)**

In 2016, APNEP received \$75,000 in grant funding from the National Fish and Wildlife Foundation to support the development of submerged aquatic vegetation (SAV) as a primary indicator of ecological condition for waters within the APNEP region. The need to document the effectiveness of implementing CCMP actions through ecological indicator monitoring makes SAV monitoring a priority. This project, conducted in partnership with East Carolina University, will contribute to a multiyear baseline of SAV status and trends in two sub-regions of a SAV sentinel network that is planned for the entire Albemarle-Pamlico estuarine system.

CCMP Components: Monitor  
 CCMP Actions: E 1.1, 1.2, 2.1, E2.2  
 CCMP Outcomes: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d  
 Intended Programmatic Output: Sentinel station monitoring to include monitoring data in ecosystem assessment (technical) and environmental indicator report card (non-technical).  
 Intended Programmatic Outcome: Information from this project will be used to increase our understanding of factors controlling SAV distribution and abundance. schools  
 Status: Ongoing APNEP project  
 Estimated 320 Cost: Staff time  
 Estimated Leverage: \$75,000



## 2018-19 PROPOSED PROJECTS & ACTIVITIES

---

The following proposed projects and activities for October 1, 2018 through September 30, 2020 are to continue to guide, support, and implement the 2012-22 CCMP. The EPA annual grant allocation to APNEP for this time period is estimated to be \$600,000. It is anticipated that the cooperative agreement award will be allocated in concert with funding forwarded to EPA Region IV under the Congressionally authorized Continuing Resolution under the current fiscal year. Projects listed as “ongoing” in the previous section may also be active during this timeframe.

### **Program Administration & Indirect Costs** (ongoing)

For more detail see Administration and Financial section.

CCMP Component: All

CCMP Actions: All

CCMP Outcome: All

Intended Programmatic Output: Program administration, partnership building, CCMP implementation

Intended Programmatic Outcome: CCMP implementation

Status: Ongoing

Estimated 320 Cost: \$441,814 direct and \$47,415 indirect cost @13.7% (see indirect costs page 36).

### **CCMP Implementation Projects** (ongoing undesignated category with new projects approved by Management Conference/ Implementation Advisory Committee)

The APNEP staff and Leadership Council will work with the Advisory Committees, associated Teams and partners to identify projects that need financial support or administrative support from APNEP for CCMP implementation. A group composed of the Leadership Council and STAC will evaluate the requests and administer the funding for priority projects and activities until the Implementation Advisory Committee is established. As APNEP works to implement the CCMP under the guidance of the Management Conference and in collaborations with partners, staff will continue to work with the various Actions Teams established over the past few years to develop projects to implement the CCMP. Funding of these projects in 2018-19 will be primarily conducted using carryover funds within the Cooperative Agreement; however, as funds become available under this addition to the agreement they may be transferred to this category of projects for the time period of October 1, 2014 - September 30, 2020.

CCMP Component: To be determined

CCMP Actions: To be determined

CCMP Outcome: To be determined

Intended Programmatic Output: Partnership building, CCMP implementation

Intended Programmatic Outcome: CCMP implementation

Status: New

Estimated Cost: \$ 58,771

Estimated Leverage: \$ 58,771

### **2018 Teacher Institute** (ongoing)



APNEP will again work with partners to offer a teacher training institute in summer of 2018. Approximately 20 public school teachers will be provided with curriculum training in earth and environmental sciences with hands-on activities, site visits, and specific content to support inquiry, experiential, and research-based instruction on estuarine and watershed resources. The UNC Institute of the Environment has been the lead over the past few years. We expect this partnership to continue.

CCMP Components:	Engage
CCMP Actions:	D 2.1, 2.2, 2.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	25 teachers trained in environmental education, water quality, and watersheds
Intended Programmatic Outcome:	Increased environmental education activities in North Carolina schools
Status:	Ongoing APNEP program
Estimated Cost:	\$ 20,000
Estimated Leverage:	\$ 11,000

**Shad in the Classroom 2019** (ongoing)

APNEP will continue to support this collaborative project that provides students with an understanding of the scientific process, an inspiration for careers in science, and a desire to protect our waterways through hands-on experience raising American shad from egg to releasable fry. This is a collaboration led by the NC Museum of Natural Sciences with support from the NC Wildlife Resources Commission and the US Fish and Wildlife Service. The objective of this project is to build an understanding of the life history of shad and an appreciation for our natural world.

CCMP Components:	Engage, Restore
CCMP Actions:	D 2.1, 2.2, 2.3
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3b
Intended Programmatic Output:	Increased community involvement in water quality and habitat protection
Intended Programmatic Outcome:	Educational program, restoration activities
Status:	Ongoing APNEP partner project
Estimated Cost:	\$ 20,000
Estimated Leverage:	\$ 11,000

**Submerged Aquatic Vegetation Monitoring** (ongoing)

In coastal waters of the APNEP region, submerged aquatic vegetation (SAV) is widely recognized for many important ecological functions. Currently, there are no long-term SAV monitoring programs established in the region that can provide reliable quantitative data on its status and trends.

CCMP Components:	Identify, Monitor
CCMP Actions:	A1.1, E1.1, E2.1
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3d, 3c, 3d
Intended Programmatic Output:	Essential environmental data collection, public outreach and involvement

Intended Programmatic Outcome: CCMP Implementation, increased environmental awareness  
 Status: In progress  
 Estimated Cost: Staff time  
 Estimated Leverage: \$ 20,000

**North Carolina Division of Water Infrastructure Projects 2017-18 (non-federal MATCH - ongoing)**

APNEP is working with the NC Division of Water Infrastructure on projects to improve water quality through waste water treatment upgrades in one or more of the APNEP river basins. The projects are used as part of the 1:1 non-federal match for the Section 320 / NEP grant.

CCMP Components: Protect, Restore  
 CCMP Actions: B1.1, B1.2, C1.5, C1.4  
 CCMP Outcomes: 1a, 1b, 1d, 2a, 2b, 3b, 3c, 3d  
 Intended Programmatic Output: Pollution control measures, upgraded infrastructure, BMPs, stormwater retrofitting  
 Intended Programmatic Outcome: Improve water quality  
 Status: Ongoing  
 Estimated Cost: Staff Time  
 Estimated Leverage: \$ 520,000

**Graduate Fellowship in Estuarine Research 2018 (ongoing)**

APNEP and the NC Sea Grant (NCSG) College Program will continue joint support of the Graduate Fellowship in Estuarine Research established in 2015. The fellowship provides funding for a graduate student based in North Carolina and Virginia with an opportunity to conduct applied research within the North Carolina portion of the APNEP management boundary. Fellows must conduct research that addresses focus areas identified in NCSG Strategic Plan and management actions identified in CCMP.

CCMP Components: Identify, Protect, Restore, Engage  
 CCMP Actions: A2.1, B2.6, C3.1, D1.3, D2.1  
 CCMP Outcomes: 2a, 2b, 2c, 3d  
 Intended Programmatic Output: Report, maps, data  
 Intended Programmatic Outcome: Increased understanding of how invasive species change marsh ecosystem function/ Increased capacity to address CCMP implantation actions  
 Status: In Progress  
 Estimated Cost: \$5,750  
 Estimated Leverage: \$5,000

**Non-320 Funds: ECU Monitoring of Submerged Aquatic Vegetation in Roanoke and Neuse River Watersheds (NC)**

As a result of funding from the National Fish and Wildlife Foundation to support the “Sentinel Network Monitoring of Submerged Aquatic Vegetation in Roanoke and Neuse River Watersheds (NC)”, APNEP intends to subcontract with East Carolina University (ECU) to maintain the methodology and criteria resulting from preliminary work done in 2014 in the Albemarle Sound to establish sentinel sites. At these sentinel sites, the subcontractor will



conduct shore-normal transects for seasonal and inter-annual comparisons. Underwater video and single-beam SONAR will be used to identify the presence of SAV along these transects at both types of surveys.

CCMP Components:	Monitor
CCMP Actions:	E 1.1, 1.2, 2.1, E2.2
CCMP Outcomes:	1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 3a, 3b, 3c, 3d
Intended Programmatic Output:	Sentinel station monitoring to include monitoring data in ecosystem assessment (technical) and environmental indicator report card (non-technical).
Intended Programmatic Outcome:	Information from this project will be used to increase our understanding of factors controlling SAV distribution and abundance.
Status:	Contract Pending
Estimated Cost:	Staff time
Estimated Leverage:	\$53,211

## **ADMINISTRATION AND FINANCIAL**

---

### **APNEP ADMINISTRATION**

APNEP staff is responsible for the coordination, planning and successful completion of APNEP functions, including Management Conference and Action Team meetings, APNEP forums and other APNEP-sponsored/partner events. In addition, staff monitors, and often becomes involved in, activities of state resource management agencies that relate to CCMP implementation, APNEP mission, and the Albemarle-Pamlico estuarine system. Staff also attends meetings, conferences and workshops in order to stay apprised of technological advancements that may prove beneficial in the APNEP region and the partnership. Although the Policy Board and Advisory Committees are instrumental in identifying local environmental issues and prioritizing management actions within each basin, most management actions are implemented by various state agencies on a local, basin-wide, regional or statewide basis and require staff involvement and interactions.

#### **Host Entity**

The North Carolina Department of Environmental Quality currently serves as the host entity for the Office and the partnership. The Office was moved to NC DEQ's Office of the Secretary in March 2018. The Department is responsible for assisting with administrative and fiscal management of the APNEP-EPA cooperative agreement, which provides federal funds for APNEP. The Department's efficiency of operation and support of the Management Conference plays a key role in the success of APNEP, including assisting in the administration of the cooperative agreement and other funding sources.

#### **Indirect Costs**

Under the 2018-19 *Negotiated Indirect Cost Agreement* between NC DEQ and the US EPA, the NC Division of Water Resources (18-19) indirect rate is 13.7% of all salaries supported by



this federal grant. Estimated indirect costs will be \$47,415 based on the indirect rate for grant-supported salaries.

*For the purposes of this budget the rates was applied to all positions funded under the Section 320 / NEP grant regardless of the position being currently created or occupied.*

*Indirect Costs is based proposed rate of 13.7 % of federal salaries as noted in the EPA/NC DEQ negotiated rate agreement dated March 1, 2018..*

### **Administrative Costs**

Overall administration costs during 2018-19 are estimated at approximately \$441,814 and include six staff FTE salaries, two temporary positions, and interns, along with benefits, longevity pay, equipment, supplies, office and office and storage space rent, IT services and phone, and training and development.

### **Personnel\***

Presently, the APNEP staff consists of the APNEP office in Raleigh, with the Director, Program Scientist, Program Manager, Policy and Engagement Manager, Ecosystems Analyst, and Program Associate. The APNEP office in Washington, NC houses the Coastal Habitats Coordinator. The APNEP office in Beaufort, NC houses the Watershed Manager. The Virginia Department of Environmental Quality also provides personnel to support CCMP implementation, however this position is not covered under program administration as it occurs at no additional cost to the program.

### **Director**

The Director administers and coordinates program activities and CCMP implementation, involving interaction with numerous federal and state resource management agencies, universities, interest groups, and the general public. This position manages the post-CCMP grants and associated contracts, provides staff support to the APNEP Policy Board and Advisory Committees, and represents APNEP at local, state, regional and national meetings. Dr. Bill Crowell has been the Director since June 2002.

### **Program Manager**

The Program Manager assists in the administration of the 320 Grant, and coordinates and manages APNEP contracting and associated activities within NCDEQ. The position also assists in the development and maintenance of broad support for the APNEP mission and CCMP implementation; provides active support for leadership and strategic direction for Partnership's efforts through CCMP implementation; initiates engagement of key APNEP partners to develop support for joint initiatives in the Albemarle-Pamlico region ; develops tracking mechanisms for performance measures and CCMP implementation efforts; and provides staff support to the Policy Board and Advisory Committees. *This position is currently vacant.*

### **Program Scientist**



The Program Scientist assists the Director with CCMP administration. This position helps design and implement a comprehensive monitoring strategy and reporting process, guides the Scientific and Technical Advisory Committee (STAC), and reviews project proposals and reports for merit. This position provides staff support to the Policy Board and Advisory Committees. Dr. Dean Carpenter has served in this role since November 2003.

### **Policy and Engagement Manager**

The Policy and Engagement Manager assists the Director and Management Conference with engagement, educational and outreach activities. The position oversees communication strategies, pursues new partnership and funding opportunities, and works with program staff to engage in new CCMP implementation actions. It also provides staff support for the Management Conference and serves as a liaison on various external working groups. Mrs. Stacey Feken has served in this role since March 2016.

### **Program Associate**

The Program Associate supports APNEP education and public outreach activities as well as APNEP field work activities. The position implements educational and outreach programs; and provides liaison responsibility for the Citizens' Monitoring Network. The position supports field/boat-based work with APNEP and its partners. This position also provides valuable staff support to the Management Conference and Action Teams. The former Policy Board created the position on September 26, 2014. Ms. Kelsey Ellis has served in this role since May 2017.

### **Ecosystems Analyst**

The Ecosystems Analyst coordinates with staff and contributing scientists and managers to assess the environmental health of the Albemarle-Pamlico estuarine system. Responsibilities include: working with partner agencies and researchers to analyze and report upon indicators of watershed and estuarine health, including identification of monitoring gaps, facilitating and supporting APNEP Action Teams and Monitoring & Assessment Teams, and managing the program's GIS functions. The position also provides staff support for the Management Conference and serves as a liaison on various external working groups. The former Policy Board created the position on September 26, 2014. Dr. Tim Ellis has served in this role since March 2017.

### **Coastal Habitats Coordinator (Non-federal Match)**

This position provides an essential function as an APNEP liaison to local governments and state agencies. The Coastal Habitats Coordinator (NC) provides coordination and support to local governments and state agencies to enhance CCMP implementation. This position also provides staff support to the Policy Board and Advisory Committees. The position also works also directs coordinated implementation of the NC Coastal Habitat Protection Plan (CHPP) in with the Coastal Resource Commission, the Marine Fisheries Commission, and the Environmental Management Commission. Jimmy Johnson has served in this role since January 2006. This position also provides support for CWMTF project applications and awardees in the APNEP region. *This position is funded by NCDEQ and provides a portion of the non-federal match for the 320 grant.*



**Watershed Manager (Non-federal Match)**

The primary purpose of this position is to assist APNEP in CCMP implementation. The position supports support to APNEP advisory committees and workgroups and monitoring and assessment efforts. The position works cooperatively with the NC National Estuarine Research Reserve in Beaufort, NC. Additionally, the position also works towards implementation of the CHPP with the APNEP Coastal Habitats Coordinator. Mrs. Trish Murphey has served in this role since January 2018. *This position is funded by NCDEQ and provides a portion of the non-federal match for the 320 grant.*

*\*All positions are administrated in compliance with NC Office of State Personnel rules and policies.*

---

**TABLE of SECTION 320 FUNDED GRANTS and CONTRACTS**

APNEP established and managed a number of projects, grants, and contracts since the last workplan from February 2017. An updated description of these items are discussed in the 2017-18 Projects and Activities section of this report.

The following table provides an overview of all active and completed contracts to local entities since the last grant applicant / annual report was approved by the former Policy Board in February 2017. It only reflects activities funded under this cooperative agreement. The narrative workplan contains descriptions of projects/activities/contracts/grants funded by other sources.

Additional contracts are anticipated prior to the end of the current federal fiscal year/reporting period. Any additional contracts / grants in the current federal fiscal year/reporting period will be reported in the workplan/report next year and in the Year-End Report to EPA Region IV.



**GRANTS AND CONTRACTS TO LOCAL ENTITIES**

Active or completed: February 24, 2017 to April 11, 2018

*See narrative for comprehensive list of partnerships and activities fund with 320 federal grant funds*

<b>Project Title</b>	<b>Funded Amount</b>	<b>Project Leader</b>	<b>Purpose</b>	<b>Deliverables</b>	<b>Completion Date</b>	<b>Status</b>
Watershed and Water Quality Planning Workshop	\$500	NCCF	Watershed Planning Workshop	Education and Outreach materials, Training	March 2017	Complete
Effects of Environment on Blue Crab Size: Fisheries Science Place Based Learning and a Reciprocal Transplant Growth Study	\$4,000	Duke University Marine Lab	Outreach and workshops will provide enrichment and place-based education for Mattamuskeet schools' students.	Knowledge transfer, Public outreach & involvement, increased environmental awareness	March 2017	Complete
NC DMF Recreational Water Quality Monitoring	\$9,000	NC DMF	Bridge funding for bacteria contamination testing in coastal recreational waters.	Monitoring data, report	March 2017	Complete
Sound Economic Development: Creating a Rising Tide for the N.C. Coast	\$4,000	North Carolina Coastal Federation	Stakeholders, practitioners, elected and appointed officials and academia and businesses discussed opportunities for oyster and coastal environmental restoration.	Workshop, knowledge transfer	March 2017	Complete
WRI Annual Conference 2017	\$1,000	Water Resources Research Institute of the UNC System	Sponsorship for WRI Annual Conference	Knowledge transfer, training	March 2017	Complete
WRI Annual Conference 2018	\$1,250	Water Resources Research Institute of the UNC System	Sponsorship for WRI Annual Conference	Knowledge transfer, training	March 2018	Complete
2017 North Carolina Coastal Conference	\$500	North Carolina Sea Grant	Sponsorship for North Carolina Coastal Conference	Knowledge transfer, training	April 2017	Complete
Discover North Carolina's River Basins Booklets and Posters	\$5,000	Office of Environmental Education and	Materials provide information about ecosystems and how humans both	Education and Outreach materials	June 2017	Complete



		Public Affairs, Department of Environmental Quality	affect and depend on the health of North Carolina's rivers.			
Microcystin Test Kits	\$505	Division of Water Resources	Funds to purchase test strips that enable rapid testing of recreational waters for potential Harmful Algal Blooms (HABs) in the lower Chowan River and western Albemarle Sound.	Monitoring data, supplies for data collection	July 2017	Complete
Coastal Discovery Camp 2017	\$3,885	North Carolina Coastal Federation	Summer enrichment program that introduces students to coastal ecosystems through outdoor, hands-on learning.	Knowledge transfer, public outreach and involvement, increased environmental awareness	September 2017	Complete
Teacher Institute on Watersheds 2017	\$24,000	UNC Institute for the Environment	Develop and Implement a Teacher Institute for up to 24 teachers	Week long Institute, report	December 2017	Complete
Shad in the Classroom 2017	\$24,000	Friends of the NC Museum of Natural Sciences	Students will raise American Shad in the classroom from egg to releasable fry	Teacher workshop, Shad Release, Podcasts & Film	December 2017	Complete
Working Group Meeting on <i>Phragmites Australis</i> in North Carolina	\$2,450	North Carolina Coastal Federation	Working group meeting to discuss the state of <i>Phragmites australis</i> , an invasive plant, in North Carolina, as well as establish an ongoing working group to determine the next steps in <i>Phragmites</i> management.	Education and Outreach materials, Training, Knowledge transfer	December 2017	Complete
Marine Planning Process Workshop	\$500	Division of Coastal Management	Sponsorship for Marine Planning Process Workshop	Training, Knowledge transfer	January 2018	Complete
Hardwood Reforestation, Twelve Hawks Tract, Nash County NC	\$3,724	Tar River Land Conservancy, Inc.	Funding to purchase tree seedlings and assist in planting for reforestation of conservation easement in Nash County.	Press release, report	March 2018	Complete
Survey of Submerged Aquatic Vegetation	\$ 6,476	East Carolina University	Support mapping / monitoring of SAC	Monitoring data, report	September 2017	Complete



NC DMF Recreational Water Quality Monitoring	\$9,000	NC DMF	Bridge funding for bacteria contamination testing in coastal recreational waters	Monitoring data, report	April 2018	In progress
Low Impact Development Stormwater Strategies	\$15,000	River City Community Development Corporation (RCCDC)	Project to incorporate Low Impact Development Stormwater Strategies into the Renaissance Square Housing Development	Knowledge transfer, improved restoration and management techniques, report	May 2018	In Progress
Kid's River Fest 2018	\$1000	Sound Rivers, Inc.	Sponsorship of mobile planetarium for environmental education programs during Kid's River Fest	Knowledge transfer, public outreach and involvement, increased environmental awareness	May 2018	In progress
Kid's River Fest 2017	\$1000	Sound Rivers, Inc.	Sponsorship of mobile planetarium for environmental education programs during Kid's River Fest	Knowledge transfer, public outreach and involvement, increased environmental awareness	May 2018	Complete
College Campus Stormwater Impact and Needs Assessment	\$19,500	Sound Rivers, Inc.	To conduct a stormwater impact and needs assessment for college campuses in the Tar-Pamlico and Neuse River basins	Assessment, Knowledge transfer, improved restoration and management techniques, report	June 2018	In Progress
Ecological Flows	\$18,435	East Carolina University	Assess the status of available flow and related data and analyze these data relative to ecological flows (EF)	Assessment, report	August 2018	In Progress
Teacher Institute on Watersheds 2018	\$24,000	UNC Institute for the Environment	Develop and implement a Teacher Institute to provide professional development opportunities for up to twenty teachers	Week long Institute, evaluation summary, report	November 2018	In Progress
Swim Guide Program	\$9,500	Sound Rivers, Inc.	Funding to initiate Swim Guide, a regional citizen science water quality monitoring program.	Public outreach and involvement, education and outreach materials, knowledge transfer	November 2018	In Progress



Shad in the Classroom 2018	\$9,920	Friends of the NC Museum of Natural Sciences	Students will raise American Shad in the classroom from egg to releasable fry	Teacher workshop, Shad Release, Podcasts & Film	December 2018	In Progress
2016 Graduate Fellowship	\$5,750	NC Sea Grant/NC State University	Graduate student fellowship to conduct applied research within the North Carolina portion of the APNEP management boundary	Assessment, report	???	Complete
2017 Graduate Fellowship	\$5,750	NC Sea Grant/NC State University	Graduate student fellowship to conduct applied research within the North Carolina portion of the APNEP management boundary	Assessment, report	December 2018	In progress
NC DMF Recreational Water Quality Monitoring	\$9,000	NC DMF	Bridge funding for bacteria contamination testing in coastal recreational waters.	Monitoring data, report	???	In progress



## I. LEVERAGE FUNDS

APNEP actively seeks alternative funding sources for partnership activities and projects to fulfill CCMP goals. In addition, APNEP pursues additional avenues for collaborating with partners to assist in targeting program funds towards CCMP and basin-wide goals. Where possible, APNEP works to cost-share projects to increase the effectiveness or the magnitude of projects, even though in several cases the APNEP was not the primary catalyst for the project or the activity.

APNEP has been successful in its ability to promote the needs, as well as the successes, associated with natural resource management, protection and enhancement efforts in the A-P region. Several state conservation-funding sources were developed in response to research funded by the Albemarle-Pamlico Estuarine Study. Examples of these programs include the Clean Water Management Trust Fund, the Clean Water State Revolving Fund Program, and the North Carolina Conservation Reserve and Enhancement Program.

### 2018-19

In 2018-19, APNEP will continue to seek additional avenues for collaborating with various partners to assist in targeting funds to support the new CCMP implementation actions and the APNEP mission. Where possible, APNEP will actively seek alternative sources of funding for APNEP activities and projects to fulfill the goals of the CCMP.

### 2017-18

During the Oct. 1, 2016- Sept. 30 2017 time period, APNEP continued to seek partners and additional opportunities for partners in targeting actions and funds towards CCMP implementation.

APNEP submitted its Leverage results in September 2017 to the EPA *NEPORT* database for the time period of October 1, 2016 to September 30, 2017. During this period APNEP leveraged approximately **\$14,099,549 or 23 dollars for every dollar received under the grant**, as compared to 15 dollars for every dollar the previous year.



# FEDERAL COST SHARE (Budget)

---

## **2018 -19 Proposed Federal Cost Share Budget**

*Beginning October 1, 2018*

*The estimated federal cost share grant for each NEP in 2018-19 is \$600,000*

Administration (Salaries, benefits**, longevity, rent, supplies, etc.)	\$ 441,814
Travel	\$ 12,000
CCMP Implementation Projects	\$ 58,771
<i>Engage: Teacher Institute</i>	\$ 20,000
<i>Engage: Shad in the Classroom</i>	\$ 20,000
Subtotal	\$ 552,585
Indirect Costs (13.7%)	\$ 47,415
	<hr/>
	<b>\$ 600,000</b>

*\*\* Includes: NCFY 18-19 Benefits are based on Social Security (7.65 %),  
Retirement (18.44 %) of position's annual salary and  
Medical Insurance Plan rate of \$6,104 per year per person  
Indirect Costs is based proposed rate of 13.7 % of federal salaries. A final EPA/NC DEQ negotiated rate was  
unavailable at the time drafting of this budget. Final budget number will reflect a change as appropriate.*



**FEDERAL COST SHARE (Budget)**

**2017 -18 Budget**

*Beginning October 1, 2017*

*The estimated federal cost share grant for each NEP in 2017-17 is \$600,000*

Administration (Salaries, benefits**, longevity, rent, supplies, etc.)	\$ 438,727
Management Conference Support	\$ 2,650
Travel	\$ 10,000
<i>Engage: Teacher Institute</i>	\$ 21,000
<i>Engage: Shad in the Classroom</i>	\$ 21,000
SAV Mapping	\$ 55,000
Subtotal	<b>\$ 548,377</b>
Indirect Costs (15.1%)	\$ 51,623
	<hr/>
	<b>\$ 600,000</b>

*\*\* Includes: Benefits are based on Social Security (7.65 %), Retirement (16.33 %) of position's annual salary and Medical Insurance Plan rate of \$5,471 per year per person  
Indirect Costs is based 15.1 % of federal salaries.*

*APNEP leadership requested that the previous year's budget be included  
in the each annual work plan for review and comparison purposes.*



## NON-FEDERAL COST SHARE (Match)

### Summary of Match Requirements

NCDEQ intends to provide \$600,000 for the required 1:1 non-federal match for time period of October 1, 2018 to September 30, 2019. This match will be provided through:

- 1) **In-kind Services:** The North Carolina Department of Environmental Quality (NCDEQ) intends to provide \$184,823 as part of the required 1:1 non-federal match the period of October 1, 2018 to September 30, 2019. This match will be provided by staff support from the Coastal Habitats Coordinator and Watershed Manager positions. The match positions are responsible for program administration, support, community involvement and guiding implementation of the APNEP CCMP and the NC Coastal Habitat Protection Plan (CHPP) and other A-P watershed issues.

<u>POSITION</u>	<u>FTE</u>	<u>SALARY</u>	<u>EFFORT</u>	<u>Match</u>
Coastal Habitats Coordinator	1	70,050	1.0	70,050
Watershed Manager	1	66,050	1.0	66,050
		Benefits*	2.0	<u>47,925</u>
		Total In-Kind Service Match:		\$ 184,823

\* Benefits are based on Social Security (7.65 %) & Retirement (18.44 %) of position's annual salary, plus Medical Insurance Plan rate of \$6,104 per year.

- 2) **In-kind Project Expenditures Non-federal Match:** The NCDEQ intends to provide \$415,177 as part of the 1:1 non-federal match for the period of October 1, 2018 to September 30, 2019. The expenditure of non-federal funds will be provided through water quality improvement projects in one or more of the APNEP river basins. State funds allocated to cover costs associated with water quality improvement projects through funding of the NC Division of Water Infrastructure for one or more projects in the APNEP program boundary.

### Division of Water Infrastructure

The North Carolina Division of Water Infrastructure provides financial assistance for projects that improve water quality. Programs within the Division fund many types of projects, including sewer collection and treatment systems, drinking water distribution systems, water treatment plants, storm water management systems, and stream restoration. The Division supports the State Water Infrastructure Authority (SWI), which was created in 2013, under North Carolina General Statute 159G-70. The SWI Authority is an independent body with primary responsibility for awarding both federal and state funding for water and wastewater infrastructure projects.

### Summary of Non-federal State Match

In-kind Positions (salaries and benefits)	\$ 184,823
Water Quality Improvement Project(s) Expenditures:	<u>\$ 415,177</u>
TOTAL:	\$ 600,000



## TRAVEL

APNEP, the Management Conference, and EPA consider personal, face-to-face contact essential for information sharing and technology transfer. As part of the federal grant requirements to attend EPA-NEP meetings, each NEP is required to allocate minimum of \$10,000 as travel funds for program activities, enhancement, education, and outreach support. These funds cannot be used to pay for travel of Federal employees. Funds are to be used for activities such as:

- 1) Presentations at or participation in national or regional NEP and EPA meetings
- 2) Presentations at or participation in workshops or conferences
- 3) Travel to other NEPs or communities to provide peer-to-peer technical assistance
- 4) Travel to other NEPs or watersheds for assistance
- 5) Travel by NEP staff or stakeholders from other NEPs or watershed programs to provide NEP with assistance
- 6) Travel to national or international conferences to share information on the NEP

Travelers may include Management Conference members, Action Team members and Monitoring and Assessment Team members, citizens, and members of environmental or public interest organizations, business or industry representatives, academicians, scientists or technical experts as determined appropriate by the APNEP Director.

As a requirement of this grant agreement, a member of the APNEP core staff are required to participate in all meetings called on behalf of the NEPs by the EPA.

### Food

While most travel funds are associated with staff, management conference members, and action team participants, travel funds and funds associated with specific workplan projects, APNEP funds awarded as grants or contracts may be used for light refreshments and/or meals served at meetings, conferences, training workshops and outreach activities (events), consistent with 41 CFR 301-74.7 and NC DEQ travel policies, and as approved by the APNEP Director.

### 2017-18 Travel

APNEP staff attended a number of meetings and conferences using the allotted travel funds and specific project funds or administration costs. Some travel costs may be associated with specific projects, as such and travel costs are budgeted/reported for those projects not listed specifically as travel. Rates are listed in the table below. Below is a summary of these activities that have occurred or are currently planned for the year:

Personnel	Date	Purpose	Location	Cost *
APNEP Staff/ Management Conference	10/1/17 to 9/ 30/18	Routine Program Activities/ meetings/ projects/ workshops/ conferences/ fieldwork/ MC meetings	APNEP area	2500
Crowell, Feken		NCAPA Conference	Greenville, NC	900
Cordeiro, Crowell	10/17	Fall 17 NEP Meeting	Boston, MA	2,700
T. Ellis, Carpenter, Johnson	10/17	DCERP Symposium	Raleigh, NC	225
Cordeiro	1/18	Marine Planning Process Workshop	Beaufort, NC	260
Crowell, K.Ellis, Feken	2/18	NOAA Social Coast Forum	Charleston, SC	1800
Crowell	3/2018	Spring NEP Meeting	Washington, DC	1400
T.Ellis, K.Ellis, Murphey		WRI Conference	Raleigh	350
Crowell, Feken	2/18	North River -Albemarle Symposium	VA Beach, Va	400
			Total*	\$ 10,535

\*Estimates up to September 30, 2018





## 2018-19 Projected Travel

All travel is allocated into three categories: In-State, Out-of-State, and EPA Required. All travel; including non-staff must be consistent with published NCDEQ travel policies (2010) and regulations (<http://www.enr.state.nc.us/ooc/pdf/trav.pdf>). Due to the dynamic nature of the NEP, all travel cannot be scheduled a year ahead: therefore, only an estimate can be provided based on established NCDEQ rates (below). Some travel is associated with specific projects, and travel costs are included in budgeted amounts. Rates are listed in the table below.

Funds will also be used for light refreshments and/or meals served at meetings, conferences, training workshops, and outreach activities (events) projects and contracts, consistent with 41 CFR 301-74.7, and as approved by the APNEP Director and the NCDEQ travel approval processes.

### NC DEQ TRAVEL RATES \*

Item	In-State	Out of State	Overnight Trip	Day Trip
<b>Breakfast</b>	\$ 8.40	\$ 8.30	Depart Office before 6:00 AM	Depart before 6:00 AM; Extend workday by 2 hours
<b>Lunch</b>	\$ 11.00	\$ 11.00	Depart Office by 12:00 Noon; Overnight return after 2:00 PM	NA
<b>Dinner</b>	\$ 18.90	\$ 21.60		Depart before 5:00 PM; Return after 8:00 PM; Workday extended by 3 hours
<b>Hotel</b>	\$ 71.20	\$ 84.10		NA

\* current rates, though hotel rates in coastal region often exceed posted rate

### In State:

In-state travel is primarily for program staff to conduct routine business associated with APNEP daily operations, field work, staff training or topical meetings germane to the program. It may also cover non-staff for NEP business (i.e., board and committee members, guest speakers, and experts). Rates are listed above.

### EPA/NEP-associated Out-of-State:

The NEPs generally hold two national meetings each year (these may be in same fiscal year or not). Each program is strongly encouraged to participate in the meetings. The spring meeting is held in the Washington, DC area and the fall meeting location rotates among the different NEP locations. The level of staff participation will vary depending on the agenda for a particular meeting. Generally one or two staff members attend. Travel may also cover non-staff (e.g., Policy Board or Advisory Committee members).

### Other Out-of-State:

Out-of-state travel is primarily for program staff to conduct business associated with the NEP, and to attend training or topical meetings germane to the program. It may also cover non-staff (e.g., board and committee members, guest speakers, experts) for NEP related activities.



## 2018-19 Projected Travel

<b>Personnel</b>	<b>Date</b>	<b>Purpose</b>	<b>Location</b>	<b>Estimated Cost</b>
APNEP Staff/ Management Conference / Volunteers	10/2018 - 9/ 2019	Normal program activities	Albemarle – Pamlico Region	\$7,000
APNEP Staff	10/ 2018	EPA/NEP national fall meeting	San Francisco, CA	\$2,500
APNEP Staff	2019	EPA/NEP national Spring meeting	Washington, DC	\$2,500
				\$12,000



### **Goal 1: A region where human communities are sustained by a functioning ecosystem**

#### Ecosystem Outcomes:

- a. *Waters are safe for personal contact.*
- b. *Designated surface and ground water supplies are safe for human consumption.*
- c. *Surface hydrologic regimes sustain regulated human uses.*
- d. *Fish and game are safe for human consumption.*
- e. *Opportunities for recreation and access to public lands and waters are protected and enhanced.*

### **Goal 2: A region where aquatic, wetland, and upland habitats support viable populations of native species**

#### Ecosystem Outcomes:

- a. *The biodiversity, function, and populations of species in aquatic, wetland, and upland communities are protected, restored, or enhanced.*
- b. *The extent and quality of upland, freshwater, estuarine, and near-shore marine habitats fully support biodiversity and ecosystem function.*
- c. *Non-native invasive species do not significantly impair native species' viability or function, nor impair habitat quality, quantity, and the processes that form and maintain habitats.*

### **Goal 3: A region where water quantity and quality maintain ecological integrity**

#### Ecosystem Outcomes:

- a. *Appropriate hydrologic regimes support ecological integrity.*
- b. *Nutrients and pathogens do not harm species that depend on the waters.*
- c. *Toxics in waters and sediments do not harm species that depend on the waters.*
- d. *Sediments do not harm species that depend on the waters.*

#### **Mission**

*To identify, restore, and protect the significant resources in the Albemarle-Pamlico estuarine system.*

## APPENDIX B: 2012-2022 CCMP ACTIONS

---

### IDENTIFY

- A1.1 Facilitate the mapping of significant ecological, bathymetric, geologic, demographic, and cultural features.
- A1.2 Facilitate the refinement and use of online conservation planning tools.
- A2.1 Facilitate the development of protocols and conduct rapid assessments to determine presence and potential threat of invasive species.
- A2.2 Create and improve projections of land use and climate change related impacts on the regional ecosystem.
- A2.3 Support research on adapting to impacts associated with climate change and sea level rise.
- A2.4 Facilitate risk assessments of targeted personal care and pharmaceutical products in the aquatic system.
- A3.1 Assess the effectiveness of policies and regulations to minimize wetland loss.
- A3.2 Assess the effectiveness of policies and regulations regarding riparian buffers.
- A3.3 Develop and refine ecological flow requirements for each major river.

### PROTECT

- B1.1 Minimize the introduction of toxics from targeted sources.
- B1.2 Minimize the introduction of pathogens from targeted sources.
- B1.3 Facilitate the protection of natural riparian buffers to reduce runoff.
- B1.4 Facilitate the development of state and local policies that support the use of low impact development.
- B1.5 Facilitate the use of best management practices on agricultural and silvicultural lands.
- B2.1 Facilitate the development and implementation of an integrated freshwater habitat protection strategy.
- B2.2 Develop and implement a submerged aquatic vegetation (SAV) protection strategy.
- B2.3 Facilitate the development of incentives for protection and management of targeted natural communities and habitats.
- B2.4 Facilitate the development of policies to minimize dredge and fill activities in naturalized areas and sensitive habitats.
- B2.5 Facilitate protection of designated anadromous fish spawning areas and inland primary nursery areas from marina impacts.
- B2.6 Minimize and rapidly respond to the introduction of invasive species through the development and implementation of integrated prevention and control strategies.
- B3.1 Assist local governments in the development of incentives for protecting natural shorelines.
- B3.2 Develop and distribute educational materials encouraging landowners to protect natural shorelines.
- B3.3 Facilitate the development of requirements for living shoreline stabilization projects that optimally protect estuarine aquatic and shoreline habitats while minimizing regulatory requirements.



## RESTORE

- C1.1 Establish contaminant management strategies for waters not meeting water quality standards.
- C1.2 Facilitate the implementation of existing contaminant management strategies.
- C1.3 Facilitate the restoration of riparian and estuarine shorelines.
- C1.4 Reduce unregulated discharge from wastewater treatment systems.
- C1.5 Facilitate voluntary retrofitting of existing development and infrastructure to reduce runoff.
- C2.1 Facilitate the development and implementation of coordinated landscape-scale hydrological restoration strategies.
- C2.2 Facilitate the development of incentives to replace hardened estuarine shorelines with living shorelines.
- C2.3 Facilitate the hydrologic restoration of floodplains and streams.
- C3.1 Develop and refine integrated invasive species eradication and control strategies.
- C3.2 Develop and implement a coordinated wetland restoration strategy.
- C3.3 Develop and implement a submerged aquatic vegetation restoration strategy.
- C4.1 Install fish ladders and eel-ways on existing dams and other permanent barriers.
- C4.2 Facilitate the removal of dams, culverts, and other in-stream barriers.
- C4.3 Restore degraded anadromous fish spawning habitats.
- C4.4 Facilitate research to improve fish passage.
- C5.1 Construct new oyster habitats.
- C5.2 Reduce the adverse impacts of harvests to existing oyster habitat.
- C5.3 Facilitate research to improve oyster restoration technologies and methods.

## ENGAGE

- D1.1 Communicate the importance of stewardship and offer opportunities for volunteerism to further APNEP's mission.
- D1.2 Facilitate efforts to improve collaborations to protect and restore ecosystem processes.
- D1.3 Coordinate outreach and engagement efforts regarding the impacts of invasive species.
- D1.4 Coordinate outreach efforts regarding the proper application of fertilizers to reduce nutrient runoff.
- D1.5 Increase opportunities for public access to waterways, public lands, and trails.
- D2.1 Provide and promote opportunities for outdoor experiences that connect individuals with the Albemarle-Pamlico ecosystem.
- D2.2 Provide environmental education training opportunities for educators in the region.
- D2.3 Increase public understanding of the relationship between ecosystem health and human health advisories relating to water, fish, and game.
- D3.1 Develop and implement a strategy to improve decision-makers' understanding of the costs and benefits of environmental protection, restoration, planning, and monitoring.
- D3.2 Facilitate the development and implementation of basinwide water management plans to ensure no less than minimum in-stream flows are maintained.



- D3.3 Provide assistance to state, regional, and local governments to incorporate climate change and sea level rise considerations into their planning processes.

## **MONITOR**

- E1.1 Facilitate the development and implementation of an integrated monitoring network through the guidance of regional monitoring and assessment teams.
- E1.2 Assess the value of information for measuring ecosystem and CCMP implementation outcomes.
- E1.3 Facilitate the expansion of volunteer monitoring into a core element of the integrated monitoring network.
- E2.1 Facilitate the design and content acquisition of a regional database based on partners' data and information needs.
- E2.2 Develop and maintain an online resource that clearly conveys regional information in support of ecosystem-based management.

