FISCAL YEAR 2020

Work Plan

CHNEP staff training Citizen Scientist volunteers how to collect and test water quality samples. March 2019

COASTAL & HEARTLAND NATIONAL ESTUARY PARTNERSHIP

Approved: May 30, 2019
Updated: September 11, 2020

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The Coastal & Heartland National Estuary Partnership (CHNEP) is comprised of citizens, elected officials, resource managers and commercial and recreational resource users working to improve the water quality and ecological integrity of the waterways in its boundaries. A cooperative decision-making process is used within the program to address diverse resource management concerns in the 4,700-square-mile study area. Many of these partners also financially support the Partnership. The governmental entities included in the CHNEP program area include the following:

U.S. Environmental Protection Agency
Southwest Florida Water Management District
South Florida Water Management District
Florida Department of Environmental Protection
Peace River/Manasota Regional Water Supply Authority
Polk, Sarasota, Manatee, Lee, Charlotte, Hardee, Hendry, and Glades Counties
Cities and Towns of Sanibel, Cape Coral, Fort Myers, Punta Gorda, North Port, Venice, Fort Myers Beach, Winter Haven, Bonita Springs, Estero, Arcadia, Haines City, Lakeland, Bartow, Lake Wales, Wauchula, Moore Haven, Clewiston, and LaBelle

Table of Contents

Tables

COASTAL & HEARTLAND NATIONAL ESTUARY PARTNERSHIP

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Florida Department of Environmental Protection

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Nicole Iadevaia, Research & Outreach Manager

PREVIOUS YEAR – FY2019 - PROGRAM ACCOMPLISHMENTS

WQ-1: Support a comprehensive and coordinated water quality monitoring and assessment strategy

- CHNEP continued to support the Coastal Charlotte Harbor Monitoring Network (CCHMN), providing funding and staff support including conducting the annual auditing and convening the various sampling entities to hold an annual meeting. Additionally, CHNEP took the lead in updating the Sampling Standard Operating Procedures to ensure uniform and appropriate protocols are being used.
- The CHNEP staff continues to support the FDEP Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network (CHEVWQMN).
- The CHNEP staff worked with USF to revise and update the CHNEP Water Atlas as well as ensure all publicly available water quality data is being uploaded. CHNEP also worked with the Aquatic Preserves to update pages regarding them, as well as designed a Water Atlas page that will present regional seagrass transect data to the public. Additionally, pages were added to include the CHNEP Study area boundary eastward to Lake Okeechobee; to add the West and East Caloosahatchee basins and call it the Caloosahatchee River Watershed.

WQ-2: Develop water quality standards, pollutant limits, and cleanup plans

- CHNEP's partner, SWFWMD, initiated the Charlotte Harbor SWIM Plan update and provided an overview of the SWIM Plan development process and preliminary results of water quality data analyses.
- CHNEP's partner, FDEP, developed draft Total Maximum Daily Load pollutant limits in 2019 for Lakes Lulu (WBID 1521), Eloise (WBID 1521B), Shipp (WBID 1521D), May (WBID 1521E), Howard (WBID 1521F), Cannon (WBID 1521H), Hartridge (WBID 1521I), Idylwild (WBID 1521J), Agnes (WBID 1466) McLeod (WBID 1588A), and Jessie (WBID 1521K) in the Peace River basin (Draft April 2019).
- CHNEP continues to partner with the Sarasota Bay National Estuary Program and Tampa Bay National Estuary Program to develop scientifically-robust numeric nutrient water quality criteria for tidal creeks in the CHNEP area.

WQ-3: Reduce urban stormwater and agricultural runoff pollution

- CHNEP funded City of North Port to develop educational brochures regarding reducing fertilizer use in order to address nutrient pollution in surface waters in the community.
- CHNEP's 2019 Spring Harbor Happening issue (8,000 copies distributed) focused on protecting the inland Heartland area, including information regarding agricultural best management practices and other strategies to reduce agricultural and stormwater pollution.
- CHNEP funded a partnership of community groups in Punta Gorda to launch "The Last Straw" educational campaign about the environmental impact of single-use disposable plastics; providing area locally-owned restaurants with information and if they sign a pledge to convert to biodegradable alternates, a kit of products to get them started.

WQ-4: Reduce wastewater pollution

- CHNEP is continuing to support its partner, Charlotte County, in their septic to sewer conversions in those areas that were determined to be high priority.
- CHNEP is continuing to support its partner, Cape Coral, in their septic to sewer conversions and installing re-use water lines in its northwest area.

WQ-5: Reduce harmful algal blooms

- CHNEP's Fall 2019 Harbor Happenings insert to the annual CHNEP calendar (34,000 copies distributed) featured information about harmful algae blooms, nutrient pollution, projects CHNEP is undertaking to reduce nutrient pollution as well as steps citizens can take to reduce it.
- CHNEP's website has been updated to provide information about harmful algal blooms and their relationship to nutrient pollution.
- CHNEP assisted in drafting a Red Tide fact sheet, which is being distributed by the CHNEP staff and other members of the Association of National Estuary Programs.
- CHNEP awarded a Public Outreach Grant to Stocking Savvy & Beautiful Ponds to test algae species and ecosystem composition and report results to produce an expert analysis of the change in algae communities over time, including DNA at the East Village Community in Venice.

HR-1: Conduct data collection, modeling, and analyses to support hydrologic restoration

- CHNEP worked with partners to design and attract funding to significant hydrologic restoration projects including Charlotte Harbor Flatwoods Initiative (CHFI), the South Lee County Watershed Initiative (SLCWI), Vital Tidal Creeks, C-43 Reservoir and Lehigh Watershed Initiative.
- CHNEP organized and facilitated meetings regarding the SLCWI to support partner coordination in the hydrological restoration of that area. Additionally, South Lee County Watershed Initiative Hydrological Modeling Phase I was funded and executed at the Corkscrew Swamp Sanctuary. A science-based, data-driven, strategic hydrological planning tool was developed that will provide guidance to resource management agencies related to the appropriate restoration and management of surface waters currently flowing from the South Lee County Watershed (SLCW) comprised of the Estero River, Spring Creek and Imperial River watersheds, and discharging into the Estero Bay Aquatic Preserve.

HR-2: Increase fresh surface water and groundwater availability to support healthy natural systems

- CHNEP and its partners continue to support the implementation of recovery strategies and projects related to upholding the Minimum Flows and Levels and Minimum Aquifer Levels in the CHNEP area.

HR-3: Preserve and restore natural flow regimes

- CHNEP funded the Yucca Pens Geotechnical and Surveying Project, to support restoring a natural flow regime in the Yucca Pens Unit of the Cecil Webb Wildlife Management Area (association with the CHFI hydrological restoration project).

FW-1: Protect, restore, and monitor estuarine habitats

- CHNEP continued to support the Southwest Florida Oyster Working Group – now known as the Southwest Ecosystem Restoration Team (SWERT), in designing, permitting and constructing oyster restoration projects in the CHNEP area.
- CHNEP collaborated with the Nature Conservancy and the City of Punta Gorda on developing a living shoreline project for a stretch of shoreline along Charlotte Harbor.

FW-2: Protect, restore, and monitor environmentally sensitive lands and waterways including critical habitat areas

- CHNEP funded the Lake Hancock Circle B Bar Reserve Restoration Project, which was to repair erosion from Hurricane Irma was repaired resulting in 939 linear feet of restored shoreline.

- CHNEP completed Habitat Resiliency to Climate Change project, producing a GIS-based analysis of climate change impacts to habitat quality and connectivity and resiliency solutions. This included a Habitat Evolution modeling effort to map habitat migration and changes throughout the CHNEP area in response to projected sea level rise.
- CHNEP completed a Habitat Restoration Needs project which created a comprehensive science-based plan of exactly where and how much of each different habitat should be preserved, conserved, reserved, restored, and managed in the CHNEP area. This included critical habitats for listed species, upland and wetland environmentally sensitive lands, as well as areas that are important to keep open to facilitate habitat migration. Habitat Restoration Needs, Phase I & II were completed this year. Phase I developed the CHNEP habitat restoration needs vision, goal, and plan project through the next 50 years and to made the information easily accessible to resource managers. The resulting information will be used by partners to identify, prioritize and implement effective habitat restoration and conservation projects, including land acquisition. Phase II is to replicate methodology used for Phase I for the CHNEP expansion area (freshwater Caloosahatchee basin).
- CHNEP awarded Micro-Grants for two drone surveys - North Port canal wading bird survey and a Caloosahatchee River wading bird nest survey.

FW-3: Assess and promote the benefits of land, waterway, and estuary protection and habitat restoration

- CHNEP completed the CHNEP Comprehensive Conservation and Management Plan (CCMP) Revision, incorporating the climate change vulnerability assessment addressing how identified climate stressors may affect achieving CCMP goals.

PE-1: Promote environmental literacy, awareness, and stewardship through expanded education and engagement opportunities for the general public

- CHNEP designed, published, and distributed 34,000 copies of the 2019 Calendar, which included an educational Harbor Happenings insert on nutrient pollution and harmful algae blooms.
- Three other regular issues of Harbor Happenings were published, with more than 4,000 mailed directly to subscribers and another 4,000 begin distributed through partners.
- CHNEP continued to support projects that engage citizens through Micro-grants and Public Outreach Grants (which were consolidated and are now called "Conservation Grants".)
- CHNEP initiated monthly Citizen Science workshops to educate and provide engaged citizens with hand-on opportunities to be involved in research, monitoring and restoration activities.
- The Adventures in the Charlotte Harbor Watershed book was converted into an interactive on-line publication accessible to teachers, students and the public.
- CHNEP awarded a Micro-Grant to University of Florida's Microplastic Awareness Program.
- CHNEP awarded a Micro-Grant to an artist who will help festival goers construct a sea dragon sculpture from marine debris at our annual Nature Festival.

PE-2: Expand reach of education and engagement opportunities to new target audiences

- The CHNEP developed a new event for underserved communities in DeSoto County, a Sustainable Fishing Clinic held at the Arcadia Rodeo. Sixty-seven kids participated in a 30-minute program which taught them the basics about water pollution, marine debris/microplastics, and sustainable fishing techniques for protecting waterways and wildlife.
- CHNEP changed our name from the Charlotte Harbor National Estuary Program to Coastal & Heartland National Estuary Partnership to reflect our many our inland partners. Four new inland partners have reactivated partnership on the CHNEP Policy Committee, including DeSoto County,

Hardee County, Arcadia and Bartow. Additionally, we met with Glades and Hendry Counties who have expressed an interest in joining.

PE-3: Strengthen non-profit partner collaboration in education and engagement programs

- CHNEP funded Keep Charlotte Beautiful's Great American Cleanup event on March 3, 2019, the largest cleanup event of the year, with over 800 volunteers.

PE-4: Increase outreach to policymakers to enhance understanding and support for CCMP implementation

- Met with numerous local, state and federal policymakers to educate them about CHNEP, its CCMP, and the current research and project funding needs of our partners.

CCMP FOCUS IN FY 2020

The Fiscal Year 2020 Work Plan and Budget reflects the newly adopted 2019 CCMP, which has the following vision, goals, objective, and strategy:

Water Quality	Hydrologic Restoration	Fish & Wildlife Habitat Protection	Public Engagement
VISION: Waters that meet their designated human uses for drinking, shellfish harvesting, or swimming and fishing, while supporting appropriate and healthy aquatic life.	**VISION:** Natural freshwater flow across the landscape to the estuaries.	**VISION:** A diverse environment of interconnected, healthy habitats that support natural processes and viable, resilient native plant and animal communities.	**VISION:** An informed, engaged public making choices and taking actions that increase protection and restoration of estuaries and watersheds.
GOAL: Water Quality Improvement.	**GOAL:** Enhanced and improved waterbodies with more natural hydrologic conditions.	**GOAL:** Natural habitat protection and restoration.	**GOAL:** Public education and engagement.
OBJECTIVE: Meet or exceed water quality standards for designated uses of natural waterbodies and waterways with no degradation of Outstanding Florida Waters.	**OBJECTIVE:** Adequate aquifer recharge and freshwater volume and timing of flow to support healthy natural systems.	**OBJECTIVE:** Permanently acquire, connect, protect, manage, and restore natural terrestrial and aquatic habitats.	**OBJECTIVE:** Increase the proportion of the population that supports and participates in actions to protect and restore estuaries and watersheds.
STRATEGY: Support comprehensive and coordinated water quality monitoring programs and projects and programs that reduce pollutants entering waterways.	**STRATEGY:** Support data-driven watershed planning and hydrological restoration projects to preserve or restore natural flow regimes and provide sufficient fresh surface and groundwater to natural systems.	**STRATEGY:** Promote and facilitate permanent acquisition and effective protection and management of critical natural habitats including wildlife dispersal areas, movement and habitat migration corridors, wetlands, flowways, and environmentally sensitive lands and estuarine habitats.	**STRATEGY:** Promote environmental awareness, understanding, and stewardship to the general public, new target audiences, and policy-makers; and strengthen non-profit partner collaboration in education and engagement programs.

WQ-1: Support a comprehensive and coordinated water quality monitoring and assessment strategy

- CHNEP will continue working with partners to collect water quality monitoring data and uploading it to the CHNEP Water Atlas for access by interested parties. CHNEP will work with our partners to develop new information pages on the Water Atlas as needed.
- CHNEP will continue to fund and support the Coastal Charlotte Harbor Monitoring Network (CCHMN).
- CHNEP will host the Watershed Summit to share water quality research and data generated in the last three years.

WQ-2: Develop water quality standards, pollutant limits, and clean-up plans

- CHNEP, together with the SBEP and the TBEP, will continue to work towards the application of numeric nutrient criteria for tidal creeks in the CHNEP area.
- CHNEP will continue to support, providing technical comment as appropriate, the development and implementation of water quality standards, pollutant limits and clean-up plans.

WQ-3: Reduce urban stormwater and agricultural runoff pollution

- CHNEP will continue to provide public presentations and information on urban stormwater and agricultural runoff pollution, as well as research algae bloom remediation techniques.
- CHNEP will continue to support partners in the implementation of stormwater and agricultural runoff reduction projects.

WQ-4: Reduce wastewater pollution

- CHNEP will continue to support partners in the implementation of wastewater discharge reduction and reuse projects.

WQ-5: Reduce harmful algal blooms

- CHNEP will continue to provide public presentations and information on harmful algae blooms and nutrient pollution, as well as research algae bloom remediation techniques.

HR-1: Conduct data collection, modeling, and analyses to support hydrologic restoration

- CHNEP will continue to actively participate in gathering data and supporting modeling and analyses for hydrological restoration projects (CHFI, SLCWI, Western Everglades and other): providing technical comments as appropriate.
- CHNEP will continue working with partners to fund integrated ground and surface water models to improve decision-making with regards to hydrologic restoration.
- CHNEP received $508,250 in NRDA funding this year to conduct the Lower Charlotte Harbor Flatwoods Hydrologic Restoration Initiative in the Yucca Pens Unit of the Babcock Webb Wildlife Management Area.

HR-2: Increase fresh surface water and groundwater availability to support healthy natural systems

- CHNEP will continue working with partners to design and attract funding to significant hydrologic restoration projects including: Charlotte Harbor Flatwoods Initiative, the South Lee County Watershed Initiative, Vital Tidal Creeks, C-43 Reservoir, Alligator Creek Watershed (Sarasota) and Lehigh Watershed Initiative.

HR-3: Preserve and restore natural flow regimes

- CHNEP will work with partners to identify funding sources to facilitate capital programs that coordinate water storage, flood control, water quality and disaster planning.
- CHNEP will continue working with partners to solicit funding to significant hydrologic restoration projects including: Charlotte Harbor Flatwoods Initiative, the South Lee County Watershed Initiative, Vital Tidal Creeks, C-43 Reservoir, Alligator Creek Watershed (Sarasota) and Lehigh Watershed Initiative.
- CHNEP will continue participating and providing technical assistance in Western Everglades restoration through project review, meeting participation and coordination of related planning and restoration efforts.

FW-1: Protect, restore, and monitor estuarine habitats

- CHNEP will continue to work with Southwest Florida Oyster Working Group/Southwest Florida Estuarine Restoration Team (SWERT) partners on designing, permitting and constructing oyster restoration projects in CHNEP area.
- CHNEP, with input from its partners, will create a regional Monitoring Strategy document as a resource for all data collection entities.

FW-2: Protect, restore, and monitor environmentally sensitive lands and waterways including critical habitat areas

- CHNEP will continue to offer grants to assist engaged citizens in exotic plant removal on public lands.
- CHNEP will disseminate the Restoration Needs Plan and work with its partners to implement to increase protection, restoration and management of environmentally sensitive lands.

FW-3: Assess and promote the benefits of land, waterway, and estuary protection and habitat restoration

- CHNEP will initiate a comprehensive regional Economic Valuation study to assess the economic benefits of land, waterway, and estuary protection and restoration.

PE-1: Promote environmental literacy, awareness, and stewardship through expanded education and engagement opportunities for the general public

- CHNEP will host a regional annual Nature Festival to highlight partners and initiatives dedicated to protecting and restoring natural resources in the CHNEP area.
- CHNEP will publish the 2020 Calendar with magazine insert and three regular magazine issues with environmental educational content, distributed throughout the study area and to the part-time residents outside the area.

- CHNEP will provide a minimum of 10 educational public events or presentations a year.
- CHNEP will continue to disseminate information through Constant Contact, on social media and on the www.chnep.org website.

PE-2: Expand reach of education and engagement opportunities to new target audiences

- CHNEP will conduct a Florida-friendly fishing workshop in conjunction with the Arcadia All-Florida Championship Rodeo, for underserved communities in DeSoto County.
- CHNEP will seek opportunities to provide education and engagement to new target audiences, including the two new County (Glades and Hendry) areas in the CHNEP expansion area.

PE-3: Strengthen non-profit partner collaboration in education and engagement programs

- CHNEP will continue to administer a Conservation grant program to foster non-profit collaborative projects and initiatives that support CCMP implementation.

PE-4: Increase outreach to policymakers to enhance understanding and support for CCMP implementation

- CHNEP will continue to meet at least annually with as many of its local, state and federal policymakers as are available to do so, explaining CHNEP's role in supporting CCMP implementation.

BUDGET OVERVIEW

Table 1: Fiscal Year 2020 Proposed Budget

Proposed Budget for Fiscal Year 2020 Coastal & Heartland National Estuary Partnership *(Federal Fiscal Year 2020)*	
Revenue	**2020**
Federal (programmatic 320 funds)	$ 600,000
State (BRDA Funds via FDEP)	$ 532,283
Partner Contributions (Local)	$ 132,000
Partner Contributions (District)	$ 258,500
Grants (Non-Federal)	$ 2,500
In Kind Services	$ -
Total Revenue	**$ 1,525,283**
Expenditures	
Personnel	$ 363,442
ANEP Membership	$ 4,500
Travel, Conferences	$ 25,000
Outreach - printings, grants, events	$ 143,900
Research and Restoration Contracts	$ 794,032
Office Rental	$ 3,425
Computer/IT	$ 18,249
Administrative Fee	$ 89,925
Communications	$ 2,600
Office Supplies and Materials/Postage	$ 2,500
Promotional/Meeting Support	$ 3,300
Reserves	$ 74,410
Total Expenditures	**$ 1,525,283**

BUDGET DETAILS

Table 2: FY 2020 Work Plan Budget

Task #	Task	Personnel with Fringe	Travel	Other	Total
1	Mgmt. Conference	$185,654	$25,000	$117,202	$327,856
2	Outreach	$88,421		$219,201	$307,622
3	Research	$27,841		$134,860	$162,701
4	Restoration	$61,530		$572,242	$633,772
5	Legislation	$18,799			$18,799
	Total	**$372,245**	**$25,000**	**$1,043,505**	**$1,450,750**

Table 3: FY 2020 Work Plan Funding Sources

Sub - Task #	Sub-Task	Federal	FDEP	SWFWMD	NRDA/ State	Grants	Local/ PMWSA	Total
1	Mgmt. Conference	$327,856						$327,856
2	Outreach	$161,141	$27,770			$2,500	$116,201	$307,612
3	Research	$78,442	$6,755	$77,500				$162,697
4	Restoration	$32,561	$40,475	$52,500	$532,283			$633,786
5	Legislation						$18,799	$18,799
		$600,000	**$75,000**	**$130,000**	**$508,250**	**$2,500**	**$135,000**	**$1,525,283**

Table 4: FY 2020 EPA Cooperative Agreement Budget

Task #	Task	Personnel with Fringe	Travel	Other	Total
1	Mgmt. Conference	$185,654	$25,000	$117,202	$327,856
2	Outreach	$60,641		$100,500	$161,141
3	Research	$8,582		$69,860	$78,442
4	Restoration	$8,561		$24,000	$32,561
5	Local				
	In-Kind			$600,000	$600,000
	Total	**$263,438**	**$25,000**	**$911,562**	**$1,200,000**

Table 5: CHNEP FY2020 Cooperative Funding Table

Funding Source	Amount	Change from FY19	Type
Federal:			
Section 320 Funding 2019 – 2020	$600,000		Clean Water Act, Section 320
Total Federal	**$600,000**		
Non-Federal:			
Sarasota County	$25,000		County Appropriation
Charlotte County	$25,000		County Appropriation
Lee County	$25,000		County Appropriation
Polk County	$15,000		County Appropriation
Manatee County	$5,000		County Appropriation
Hardee County	$500		County Appropriation
City of Cape Coral	$7,500		City Appropriation
City of Fort Myers	$5,000		City Appropriation
City of Punta Gorda	$5,000		City Appropriation
City of Sanibel	$2,500		City Appropriation
City of Bonita Springs	$2,500		City Appropriation
City of Fort Myers Beach	$2,500		City Appropriation
City of Venice	$2,500		City Appropriation
City of North Port	$1,000		City Appropriation
City of Winter Haven	$1,500		City Appropriation
Village of Estero	$5,000		Village Appropriation
City of Arcadia	$500		City Appropriation
City of Bartow	$500		City Appropriation
Total Local Government	**$121,500**		**(CASH MATCH)**
NOAA funding via FDEP	$532,283	$532,283	NRDA funding via FDEP
FDEP	$75,000		District Appropriation
SFWMD	$50,000		District Appropriation
SWFWMD	$130,000		District Appropriation
Peace Manasota Water Supply Authority	$3,500		District Appropriation
Total State/District	**$790,783**		**(CASH MATCH)**
Charlotte County MAC	$2,500	($2,500)	Grant
Total Grants	**$2,500**		**(CASH MATCH)**
(CASH MATCH)	**$925,283**		
Non-Federal Match Requirement	$600,000		
TOTAL COOPERATIVE FUNDING	**$1,525,283**	**$529,783**	

Table 6: Completed FY2019 Travel

Table 6: FY2019 Completed Travel			
Funding Agency	**Description**	**Budget**	**2019 Actual**
EPA	TRAVEL & PER DIEM	$ 25,000.00	$ 17,346.94
Total FY19 Travel		**$ 25,000.00**	**$ 17,346.94**

Table 7: Projected FY2020 Travel

Date	Purpose	# Staff	Location	Length of Stay	Travel Mode	Reg. Fee	Estimated Travel Cost
Oct. 2019	EPA Tech Transfer	2	Dewey Beach, DE	4	Air	$580	$2,264
Dec. 2019	CERF	1	Mobile, AL	6	Air	$585	$2,150
January, 2020	Everglades Coalition	1	Florida	3	Auto	$355	$1,031
Feb. 2020	AWRA	1	Fort Myers, FL	1	Auto	$75	$75
Feb. 2020	GOMA	2	Tampa, FL	4	Auto	$1300	$2,100
Spring 2020	NEP/EPA Spring Mtg.	1	Washington, DC	4	Air	$300	$2,224
Spring 2020	GOMA	1	Miss/Ala.	4 days	Air	$100	$1,845
Spring 2020	PFLCC/estuarine	1	Florida	3	Auto	$0	$752
Spring 2020	Meet with Region 4 Staff	1	Atlanta, GA	3 days	Air	$0	$1,112
FY 20	Local Travel/Meetings	6	Various	<1 day	Auto	$300	$7,852
			Subtotal			$3,595	$21,405
			Total				**$25,000**

Table 8: FY2020 Outreach and Education Projects

FY	Code	Funder	Title	Amount
2020	CH2AST	EPA	CHNEP Special Projects	$5,000
2020	CH2POG	Local	CHNEP Conservation Grants	$30,000
2020	CH2TAR	Manatee	CHNEP Target Audience	$5,000
2020	CH2TAR	EPA	CHNEP Target Audience Programs	$24,900
2020	CHWCAL	EPA	CHNEP Calendar	$25,000
2020	CH2CAS	Local	CHNEP Calendar Support	$5,000
2020	CH2COL	EPA	CHNEP Collateral, Posters, etc.	$6,000
2020	CH2HH	EPA	CHNEP Harbor Happenings	$18,000
2020	CH2SPO	EPA	CHNEP Sponsorships	$6,500
2020	CH2MAC	WCIND	CHNEP Events- Fishing Clinics	$2,500
2020	CH2WS	EPA	CHNEP Watershed Summit	$6,000
2020	CH2FEA	EPA	CHNEP FL Estuaries Alliance Red Tide Educational Campaign	$10,000
			TOTAL FY 2020	**$143,900**

Table 9: FY2020 Technical Projects Funding Table

FY	Code	Funder	Project Title	Amount
2019	CH4WMS	Mosaic	Warm Mineral Springs Run Restoration	$56,000
2019	CH4TBD	SWFWMD	TBD Project	$25,000
2019	CH4WMS	Local	Warm Mineral Springs Run Restoration	$8,990
Remaining Carry-Over from FY19				**$89,990**
NCE	CH3SAV	EPA-NCE	Quantifying WQ Benefits of SAV Restoration	$45,000
NCE	CH3EVS	EPA-NCE	CHNEP Economic Valuation Study	$94,299
NCE	CH4HR2	EPA-NCE	CHNEP Habitat Restoration Needs Phase II	$73,423
NCE	CH4GMM	EPA-NCE	Gateway to Myakka Marsh Restoration	$25,764
NCE	CH4TBD	EPA-NCE	South Lee County Watershed Initiative	$141,839
Remaining Carry-Over from NCE				**$380,325**
2020	CH3CMN	SWFWMD	CCHMN - Upper Charlotte Harbor	$65,000
2020	CH3LCH	EPA	CCHMN - Lower Charlotte Harbor	$11,000
2020	CH3LCH	EPA	CCHMN - assistance	$3,240
2020	CH3WA	EPA	CHNEP Water Atlas Maintenance	$52,000
2020	CH3WA	EPA	CHNEP Water Atlas Improvements	$17,000
2020	CH4TBD	EPA	TBD Project	$ 24,000
2020	CH4TBD	SFWMD	South Lee County Watershed Initiative	$50,000
2020	CH4CHF	SWFWMD	LCHFI Hydrologic Restoration	$24,704
2020	CH4CHF	SWFWMD	LCHFI Hydrologic Restoration	$14,805
2020	CH4CHF	FDEP-NRDA	Lower Charlotte Harbor Flatwoods Hydrologic Restoration Initiative (LCHFI)	$532,283
Total FY20				**$794,032**

NCE = No Cost Extension funds, to be completed by September 30, 2021.

Table 10: FY2020 SWFWMD Funding by Task

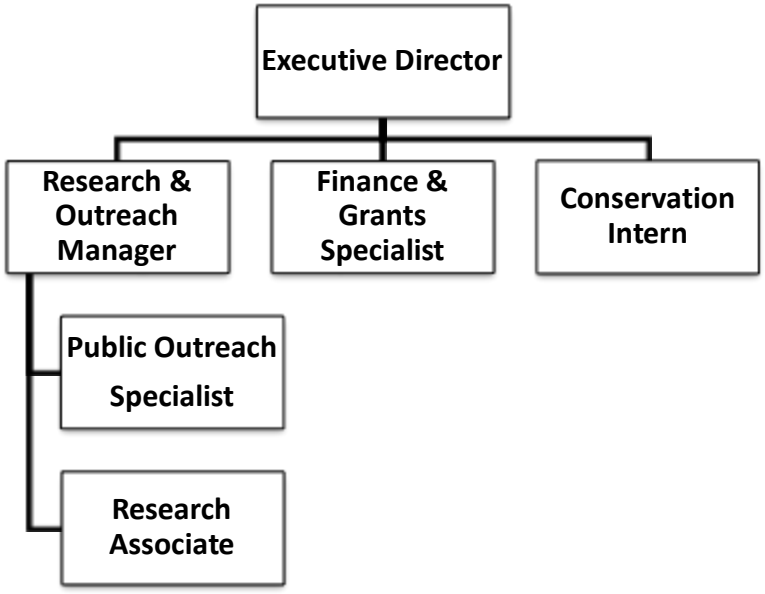
Task	Project	SWFWMD	Project Total
1 (Work Plan Task 3.1)	CCHMN - Upper Charlotte Harbor	$65,000	$65,000
2 (Work Plan Task 3.5)	LCHFI Hydrologic Restoration	$24,704	$24,704
3 (Work Plan Tasks 3 & 4)	Staff Support	$25,491	$50,982
4 (Work Plan Task 4.7)	LCHFI Hydrologic Restoration	$14,805	$14,805
Totals:		**$130,000**	**$155,491**

Table 11: FY2020 Budgeted Administrative Costs

Fiscal Year	Code	Funder	Expense Title	Amount
2020	CHEPA1	EPA	CHNEP Pre-employment expenses	$503
2020	CH1COM	EPA	CHNEP Communications	$2,600
2020	CH1MAT	EPA	CHNEP Materials and Supplies	$2,500
2020	CH1OAD	EPA	CHNEP Overhead Administrative Charges	$89,925
2020	CH1OCP	EPA	CHNEP Overhead Computer	$18,249
2020	CH1ORN	EPA	CHNEP Overhead Office Rent	$3,425
2020	CH1PRO	Local	CHNEP Promotional Activities-Meeting Support	$800
2020	CHFOOD	Local	CHNEP Meeting Support	$2,500
2020	CH5ANEP	Local	CHNEP ANEP Dues	$4,500
			Total FY20 =	**$125,002**

STAFF AND THEIR OFFICIAL RESPONSIBILITIES

The FY20 CHNEP staffing plan includes five fulltime professionals and one full-time intern position.



Executive Director: Responsible for overall program management including cultivating and strengthening partnerships, soliciting funding for the program and projects, and is the liaison to Policy and Management Committees.

Research and Outreach Manager: Responsible for research and restoration initiatives, public engagement and education initiatives, and is the staff liaison to Technical and Citizens Advisory Committees.

Finance and Grants Specialist: Responsible for finance, grants and contracts administration.

Public Outreach Specialist: Assists organizing and conducting public engagement and education initiatives, as well as overseeing volunteer management.

Research Associate: Assists research and restoration initiatives, as well as drafting the technical content for articles, as well as technical content for grant proposals and reports.

Conservation Intern: Intern to provide administrative and public engagement support, as well as to support research, outreach events, publication production, meeting support, and social media.

NEW AND ONGOING PROJECTS

The CHNEP projects are organized according to task. There are five tasks, as follows:

Task 1: Management Conference
- 1.1 CCMP Revision Phase II
- 1.2 Conservation Grants
- 1.3 Sponsorships
- 1.4 Program Office Collateral / Reprints

Task 2: Public Engagement
- 2.1 2020 Calendar and four issues of Harbor Happenings
- 2.2 Public Engagement – Targeted Projects and Events
- 2.3 CHNEP Watershed Summit

Task 3: Research Coordination
- 3.1 Charlotte Harbor Water Quality and Seagrass Monitoring and Mapping Programs
- 3.2 CHNEP Water Atlas Maintenance
- 3.3 CHNEP Water Atlas Improvements
- 3.4 CHNEP Economic Valuation Study
- 3.5 Lower Charlotte Harbor Flatwoods Hydrologic Restoration Initiative, Yucca Pens Unit
- 3.6 Quantifying the Water Quality Benefits of Submerged Aquatic Vegetation (SAV) Restoration

Task 4: Watershed Coordination
- 4.1 Submerged Aquatic Vegetation Restoration
- 4.2 Warm Mineral Springs Run Restoration
- 4.3 Gateway to Myakka River State Park - Marsh Restoration & Education
- 4.4 Native Upland Plantings at Wildflower Preserve
- 4.5 Alligator Creek Stream Restoration Project
- 4.6 New Project(s): Restoration Project Grant(s)

Task 5: Policymaker Education

CLEAN WATER ACT (CWA) CORE PROGRAM GOALS TASKS & PROJECTS ARE DESIGNED TO ADDRESS:

1) Establishing water quality standards
2) Identifying polluted waters and developing restoration plans
3) Permitting discharges of pollutants from point
4) Addressing diffuse, nonpoint sources of pollution
5) Protecting wetlands
6) Protecting coastal waters through the National Estuary Program
7) Protecting large aquatic ecosystems

Task 1 Management Conference, Program Planning, Administration, Finance, Operations

Work Plan Objective: Provide committee structure that supports the implementation of the CCMP; support administration of CHNEP; ensure compliance with grant and agreement requirements as awardee and awarder; and seek additional funding support for identified projects.

Description: The CHNEP Program Office provides staff support to the Management Conference, furnishes operations and finance support, ensures compliance with Host Agency procedures, secures funding from partners, and assists partners seeking grants and contracts to implement the CCMP.

CCMP Elements Implemented: All

Outputs/Deliverables, Milestones

- Management Conference committee meetings
- Management Conference adoption of Annual Work Plan, no later than June 1, 2020
- GPRA Reporting through EPA's NEPORT app, by September 14, 2020
- Administration of Program Office operations and finances, ongoing
- Collaborate with partners on CCMP implementation, ongoing
- Comply with Host Agency finance and procurement requirements, ongoing
- Initiate compilation of materials for Performance Evaluation
- Funding opportunities posted to the CHNEP website, ongoing

320 Budget: $327,856

FY 20 Budget:
Staff:

320 Funds: $327,856

Staff:	$185,654
Travel:	$25,000
Admin Costs:	$117,202

Estimated Total Budget: $327,856

Outcomes

- Fully informed and engaged the CHNEP Management Conference with members participating in Committee, subcommittee and work group meetings
- CCMP Implemented
- Funding obtained to sustain the CHNEP Program Office and accomplish annual work plan
- CHNEP remains eligible for Federal, State and non-profit grants and funding
- Compliance with Florida Government in the Sunshine laws
- Increased understanding of the CHNEP program office and NEP mission by partners
- Commitment from partners to fund CHNEP
- Funding opportunities and assistance provided to partners

CWA Core Program addressed: (5) protecting wetlands, and (6) protecting coastal waters through the National Estuary Program.

Task 1.1 Ongoing Project: CCMP Revision Phase II

Project Objective: The objectives to support the project purpose of completing the CHNEP CCMP Revision include that it:

- Conforms with current NEP Funding Guidance
- Conforms with current NEP CCMP Revision and Update Guidelines (5-3-2016)
- Conforms to a style and design that are easily accessible and understandable to the public

Project Description: Graphic design and layout of the Revised CCMP is required to complete publication and distribution of the CCMP. A Public Summary version of the Revised CCMP is also needed for distribution. US EPA Guidance on CCMP Revisions also requires four supplemental documents to be completed within 3 years of the final Revised CCMP: Monitoring Strategy, Finance Strategy, Habitat Protection/Restoration Strategy, and Communication/Outreach Strategy. Completion of the Habitat Protection/Restoration Strategy is currently under contract with ESA (Habitat Restoration Needs Plan (HRN) and Habitat Resiliency with Climate Change (HRCC).

CCMP Elements Implemented: All

Outputs/Deliverables

- Complete the graphic design and layout of the Final Draft CCMP Revision
- Draft of the Public Summary version of the Revised CCMP
- Draft of three CCMP Strategy documents
- Present drafts to Management Conference for approval

Estimated Milestones

320 Budget: $25,000 + Staff time budgeted in FY19

FY 20 Budget: $0

Estimated Total Budget: $25,000 FY19 + Staff time

Outcomes

- CCMP Revision and all supporting documents completed and published

CWA Core Program addressed: (2) identifying polluted waters and developing restoration, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, and (6) protecting coastal waters through the National Estuary Program.

Task 1.2 Ongoing Project: Conservation Grants

Project Objective: Implementation of CCMP through award of funding for small projects.

Project Description: To streamline CHNEP's grant program, the Public Outreach Grant and Micro-Grant have been combined into one application. Projects are funded in the $500 to $3,000 range and any citizen, organization, business, government agency, school, college or university may apply. The project must occur within the greater Charlotte Harbor watershed and be completed within the fiscal year.

CCMP Elements Implemented: All

Outputs/Deliverables

- Outputs vary with project, but all projects submit a final project report as a deliverable

Estimated Milestones:

- All proposals reviewed and recommendations for funding completed according to the cycle schedule:
  Summer Deadline is August 1, 2019 for October 2019 award notice
  Winter Deadline is December 1, 2019 for February 2020 award notice
  Spring Deadline is April 1, 2020 for June 2020 award notice
- All payments processed by September 30, 2020

320 Budget: $0

FY 20 Budget:

Local funds: $30,000

Estimated Total Budget: $30,000

Outcomes:

- Further partnerships to protect and restore the CHNEP area
- Engage citizens in opportunities to be involved in research, monitoring, and restoration activities
- Expand CHNEP outreach and education through citizen actions
- Protect the environment
- Solve local, small scale issues of concern identified in the CCMP

CWA Core Program addressed: potentially all

Task 1.3 Ongoing Project: Sponsorships

Project Objective: Implementation of CCMP through support of conferences, workshops and events.

Project Description: CHNEP receives requests to sponsor conference, workshops, symposia, etc., that implement the CCMP. In prior budgets these sponsorships were supported through micro-grant funds.

CCMP Elements Implemented: All

Outputs/Deliverables

- CHNEP acknowledged as event sponsor, with logo on event materials

Estimated Milestones:

- All funds awarded, obligated and payments processed by September 30, 2020

320 Budget: $6,500

FY 20 Budget:

320 Funds: $6,500

Estimated Total Budget: $6,500

Outcomes:

- Further partnerships to protect and restore the greater CHNEP area
- Engage scientists, researchers, stakeholders and decisions makers in events that educate and inform about research, monitoring, and restoration activities relevant to CHNEP
- Inform general public, potential partners, targeted audience about CHNEP's mission

CWA Core Program addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 1.4 Ongoing Project: Program Office Collateral/Reprints

Project Objective: To provide outward looking Program Office information, materials to partners, decision makers and interested public. With the name change to the Coastal & Heartland National Estuary Partnership, new materials will be procured.

Project Description: The CHNEP Program office utilizes letterhead, labels, and other support materials on a day to day basis. In addition, CHNEP participates in conferences, festivals, and events as an exhibitor. This task supports the development and purchase of the needed materials and supplies.

CCMP Elements Implemented: All

Outputs/Deliverables

- Uniform branding of CHNEP products and materials, ongoing
- Reprints of CHNEP posters published in Harbor Happenings

Estimated Milestones:

- CHNEP branded materials available to staff and partners as needed

320 Budget: $6,000

FY 20 Budget:

320 Funds: $6,000

Estimated Total Budget: $6,000

Outcomes:

- Educate the public about our name change
- Expand CHNEP partnerships
- Engage decision-makers and citizens in CHNEP activities
- Protect the environment

CWA Core Program addressed: (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, and (6) protecting coastal waters through the National Estuary Program.

Task 2 Public Engagement

Work Plan Objective: Provide essential ongoing communications so CHNEP can address specific requirements and issues associated with the CCMP; support the CHNEP Management Conference and partners' public outreach initiatives to further the CCMP.

Description: Tools used to provide continuous support of the overall program include website, social media and media. They range from events (workshops, festivals and trainings), to publications (magazines, calendars and books), to videos and target audience initiatives.

The website, *www.CHNEP.org*, provides information to the general public, technical community and Management Conference including technical and public engagement information produced or sponsored/supported by the Program.

Social media tools currently used include:

- YouTube. More than 400 videos and talks (PDF files with linked with audio) are posted
- EventBrite. CHNEP events requiring registration are promoted on this site
- Facebook. Weekly posts promote CHNEP projects
- Constant Contact. Notices of Management Conference meetings and events and requests for document review and comment are sent to subscribers
- CHNEP website. The CHNEP program office utilizes its website to provide current information about projects, meetings, grant opportunities, and volunteer activities
- CHNEP Water Atlas. The Water Atlas publishes a calendar that lists events open to the public

This task also includes assistance required to accomplish diverse outreach tasks.

CCMP Elements Implemented: PE-1, PE-2, PE-3, and PE-4.

Partners and their roles
CHNEP conducts all projects in cooperation with and in support of its partners:

Outputs

- Continuously update website for Management Conference meetings and activities, promote projects and serve as a repository of all materials produced by CHNEP
- Weekly posts on social media, including Facebook and Tumblr
- Use EventBrite to promote and handle registrations for events
- Post videos and talks (PDF with audio) on YouTube as completed
- Prepare and distribute email messages via Constant Contact to announce Management Conference meetings and promote CHNEP projects
- Work with local media to promote one story a month
- Citizen science workshops and events

Estimated Milestones

- 2020 Calendar will be mailed annually
- CHNEP staff will assist with a regional Nature Festival
- CHNEP will update the website regularly
- CHNEP will coordinate with local media regularly

320 Budget: $60,641

FY 20 Budget:

Staff:

320 Funds: $60,641
FDEP Funds: $27,770

Estimated Total Budget: $88,411

Outcomes

- Educate and engage people about CHNEP and the natural environment of southwest Florida. Many of the items help people become engaged by enjoying the environment through outdoor experiences, by asking them to be citizen scientists and by engaging in events, such as the Watershed Summits and the Nature Festival, and CHNEP and our partners' programs that help implement the CCMP. Many people have volunteered that they have changed their behavior as a result in learning more about an issue
- Continuously introduce CHNEP to new populations and new residents through events, publications and social media
- Establish new partnerships and strengthen existing partnerships through funding opportunities for projects that implement the CCMP
- Residents and seasonal visitors within the CHNEP study area develop a sense of stewardship for the natural environment within the CHNEP study area
- Increase the number of partners who conduct projects that help fulfill the CCMP

CWA Core Program addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 2.1 Ongoing Project: 2020 Calendar and Four Issues of CHNEP *Happenings* Magazine

Project Objective: Educate, motivate and engage the public and partners through contributing articles and by donating up to three images that show the beauty and diversity of the native, natural environment.

Project Description: CHNEP designs, publishes and distributes an annual calendar that showcases images donated by citizens that depict the beauty and diversity of the native, natural environment. The calendar encourages people to learn about and become involved in CHNEP. With permission, the images are used in other ways by CHNEP, including weekly Tumblr posts, in the *Happenings* magazine and on the www.CHNEP.org website.

CHNEP publishes the quarterly *Happenings* magazine *Happenings* to report on environmental "happenings," including watershed issues, events and updates on Program activities and progress towards implementing the CCMP. One issue is now incorporated into the calendar.

CCMP Elements Implemented: PE-1, PE-2, PE-3, and PE-4.

Partners and their roles: Articles and images are donated by interested citizens and Management Conference partners. The images are reviewed and selected for publication by the CAC. The calendars are distributed in multiple ways, including U.S. Mail to individual citizens and in bulk to 200+ partners that volunteer to redistribute in their area and at events.

Outputs/Deliverables: Four issues of *Happenings magazine* (one of which is included in the calendar) and annual calendar featuring donated images that depict the beauty and diversity of the native, natural environment and highlighting CHNEP and its programs.

Estimated Milestones:

- *Happenings* printed and distributed 4 times a year
- Calendar published and distributed annually

320 Budget: $48,000

FY 20 Budget:

320 Funds:	$43,000
Grant Funds:	$5,000

Estimated Total Budget: $48,000

Outcomes: The interested public and CHNEP partners all become more knowledgeable and engaged in the stewardship of the natural environment in which they live.

CWA Core Program addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 2.2 Ongoing Project: Public Engagement - Events

Project Objective: Support projects, initiatives, and workshops that educate and engage people about the issues that affect the natural environment of southwest Florida so they become better stewards.

Project Description:
Events provide information and activities for various audiences, ranging from citizens to environmental professionals to decisions makers. Events also provide opportunities for partners to network, collaborate and learn about projects and solutions to issues in southwest Florida. CHNEP now organizes and hosts routine citizen science and volunteer events that involve presentations followed by activities relating to protecting and restoring natural resources.

The annual Nature Festival showcases local environmental agencies, nonprofit organizations and businesses that focus on the natural environment of southwest Florida. Approximately 60 exhibitors participate.

CCMP Elements Implemented: PE-1, PE-2, PE-3, and PE-4.

Partners and their roles: CHNEP Management Conference members, other partners and the public participate in all of these events. Local nonprofit and government partners provide support.

Outputs/Deliverables
- Nature Festival
- 10 Citizen Science and volunteer events

Estimated Milestone:
- Plan, promote and participate in a regional Nature Festival
- Plan, promote and facilitate 10 citizen science and volunteer events annually

320 Budget: $21,500

FY 20 Budget:

320 Funds	$21,500
Grant:	$2,500
Estimated Total Budget:	$24,000

Outcomes
- Increase understanding of how personal actions affect the environment
- Citizens develop a sense of stewardship for the natural environment in the CHNEP study area
- Increase numbers of partners conducting projects that help fulfill the CCMP

CWA Core Program addressed: (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, and (6) protecting coastal waters through the National Estuary Program.

Task 2.3 New Project: CHNEP Watershed Summit

Project Objective: To host a public summit on the state of our watershed and estuaries.

Project Description: The Coastal & Heartland National Estuary Partnership (CHNEP) hosts triennial conferences for area scientists, resource managers, planners, industry and citizens to learn more about the current research and restoration efforts as well as critical environmental issues affecting the CHNEP area.

A Watershed Summit is organized by CHNEP every three years (most recently in 2017) to exchange technical information on research, restoration, and management efforts throughout the Program area. Topics include a wide range of scientific disciplines, geographical locations, and critical environmental issues. Presentations from CHNEP-hosted workshops and conferences are typically archived on the web in PDF or video formats. The Watershed Summit is sponsored by CHNEP partners.

CCMP Elements Implemented: PE-3

Partners and their roles: CHNEP Management Conference members, other partners, and the public.

Outputs/Deliverables

- Watershed Summit event

Estimated Milestones:

- Plan, promote and participate in a regional Watershed Summit

320 Budget: $6,000

FY 20 Budget:

320 Funds	$6,000
Estimated Total Budget:	$6,000

Outcomes

- Professional exchange and technology information transfer amongst partners

CWA Core Program addressed: All

Task 3 Research Coordination

Work Plan Objective: To ensure collection, reporting and access to consistent region-wide, technically sound water quality and biological data throughout the CHNEP Study Area. To identify and resolve gaps in scientific data and emerging research needs through partnerships and innovative research.

Description: CHNEP coordinates the Coastal Charlotte Harbor Monitoring Network (CCHMN) and supports the FDEP Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network (CHEVWQMN) and the Water Management Districts' seagrass aerial mapping projects. CHNEP works with partners to identify and resolve gaps in water quality and biological data, specifically through refinements to the Monitoring Strategy. An identified data gap in understanding nutrient dynamics in tidal creeks will be addressed by a partnership research project of the three NEPs in southwest FL, with technical and field contributions from CHNEP staff. In addition, CHNEP assists partners with compiling, analyzing, mapping and conveying complex technical information in an understandable manner so it can be used to implement effective resource protection and restoration projects. The resulting data is used to assess resource status and trends, determine TMDLs and Minimum Flows and Levels, and be incorporated into resource management plans such as the Southwest Florida Feasibility Study and the SWFWMD Charlotte Harbor and SFWMD Lower Charlotte Harbor SWIM plans.

CHNEP staff work with USF to revise and update the Water Atlas as needed, and to ensure WQ data is uploaded. In FY2019 CHNEP plans to work with the Aquatic Preserves to design a Water Atlas page that presents the seagrass transect data to the public.

CCMP Elements Implemented: WQ-1, WQ-2, HR-1, FW-2, and PE-1.

Partners and Roles:

- U.S. Environmental Protection Agency – Support CCHMN
- Southwest Florida Water Management District – Support CCHMN and seagrass aerial mapping
- South Florida Water Management District – Support seagrass aerial mapping
- Florida Department of Environmental Protection – Support CCHMN, CHEVWQMN, seagrass and rookery monitoring
- Friends of Charlotte Harbor Aquatic Preserves and Estero Bay Buddies – Support CHEVWQMN, oyster restoration, seagrass transect and rookery monitoring
- Charlotte County – Support CCHMN
- Lee County – Support CCHMN
- Florida Fish and Wildlife Conservation Commission – Support CCHMN
- Cape Coral – Support CCHMN
- Sarasota County – Support CCHMN, and oyster monitoring

Outputs/Deliverables, Milestones:

- ***CHNEP Water Atlas:*** Review and assess uploaded water quality sampling data
- ***Water Quality Monitoring:*** Monthly water quality data, quarterly RAMP participation, and CCHMN annual field audits
- ***Seagrass Monitoring:*** Annual seagrass data
- ***Seagrass Aerial Mapping:*** Biennial and 5 year seagrass aerial mapping
- ***Data Management:*** Biannual up-dates of water quality data
- ***Data Access:*** Ongoing access to water quality data, graphing and analyses and response to data requests
- ***Data Analysis and Use:*** Annual up-dates of water quality contour maps and, and periodic refinement of Research Needs Inventory and environmental indicators

320 Budget: $8,582

FY 20 Budget:
Staff:

320 Funds:	$8,582
FDEP Funds:	$6,741
SWFWMD Funds:	$12,500

Estimated Total Budget: $27,823

Outcomes

- Provide consistent region-wide, technically sound water quality and biological data needed to assess resource status, trends and complex interactions
- Provide access to water quality and seagrass data to partners via CHNEP Water Atlas
- Provide data analyses, maps and graphs to enhance and evaluate protection and restoration efforts
- Increase collaboration of monitoring, mapping and management among resource managers and agencies from throughout the CHNEP Area
- The data is used by partners to assess resource conditions, manage resources and implement effective and efficient management programs and restoration projects

CWA Core Program addressed: (1) establishing water quality standards, (2) identifying polluted waters and developing restoration plans, (3) permitting discharges of pollutants from point, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 3.1 Ongoing Project: Charlotte Harbor Water Quality and Seagrass Monitoring Mapping Programs

Project Objective: To ensure collection, reporting and mapping of consistent, technically sound long-term water quality and seagrass data throughout the CHNEP estuaries and tidal creeks. The resulting data is shared with partners to be used for assessing resource status and trends and implementing effective management programs and restoration projects.

Project Description: CHNEP participates in four coastal water quality and seagrass monitoring and mapping programs. CHNEP coordinates the Coastal Charlotte Harbor Monitoring Network (CCHMN), which is a partnership of agencies that provides monthly water quality data using a probabilistic sampling design. CCHMN field and laboratory partners collect and analyze water samples from 60 randomly selected field sites throughout 10 waterbodies each month, including: Lemon Bay, Cape Haze/Gasparilla Sound, Charlotte Harbor, Pine Island Sound, Matlacha Pass, San Carlos Bay, Estero Bay and the Tidal Myakka, Peace and Caloosahatchee Rivers. Water quality parameters include: depth, clarity, temperature, salinity, dissolved oxygen, pH, conductivity, photosynthetically active radiation (PAR), chlorophyll, color, nitrogen components, phosphorus components, turbidity, suspended solids, and organic Carbon. CHNEP coordination activities for the CCHMN include: developing and updating Standard Operating Procedures and field Quality Assurance plans, conducting annual field audits, hosting annual meetings, participating in quarterly Regional Ambient Monitoring Program (RAMP) quality assurance meetings, providing access to the data through the CHNEP Water Atlas, including data graphing, mapping and reporting, and assisting with field sampling and equipment repair as needed.

CHNEP support activities for the Aquatic Preserves seagrass monitoring include providing access to the data through the CHNEP Water Atlas and assisting with monitoring as needed.

CHNEP supports activities for the seagrass aerial mapping including: reviewing draft results and providing maps of the seagrass results for each of the 13 CHNEP estuary sub-basins (strata).

CCMP Elements Implemented: WQ-1, WQ-2, HR-1, FW-1, FW-2, FW-3, PE-1, and PE-3.

Partners and Roles:

CCHMN:		
Water Quality monitoring support:	$65,000	SWFWMD
	In-kind	Charlotte County, Lee County, Cape Coral, FDEP
	In-house	CHNEP Staff (Primary)
RAMP WQ quality assurance:	In-kind	Charlotte County, Lee County, Cape Coral, FDEP, FWRI
	In-house	CHNEP Staff (Primary)
CHEVWQMN:		
Water Quality monitoring support:	In-kind	FDEP CHAP, EBAP
	In-kind	Friends of CHAP and EBAP
	In-kind	Charlotte Harbor Environmental Center
Seagrass Transects:	In-kind	FDEP CHAP, EBAP, South District
Seagrass Aerial Mapping:	In-kind	SWFWMD, SFWMD
	In-house	CHNEP Staff

Outputs/Deliverables:

- ***CCHMN:*** Monthly water quality data, annual field audit results, annual meeting, and quarterly RAMP participation
- ***CHEVWQMN:*** Monthly water quality data and biannual quality assurance results
- ***Seagrass Monitoring:*** Annual seagrass transect data
- ***Seagrass Aerial Mapping:*** Seagrass aerials and maps from SWFWMD every 2 years and from SFWMD every 5 years
- ***RAMP:*** participation in meetings

Estimated Milestones:

- ***CCHMN and CHEVWQMN:*** Water quality samples collected monthly, analyzed within holding periods, reported quarterly and uploaded to state water quality data base within 6 months
- ***Seagrass Monitoring:*** Seagrass data collected annually and reported within 18 months
- ***Seagrass Aerial Mapping:*** Seagrass aerial mapping conducted every 2 years by SWFWMD and every 5 years by SFWMD and reported and maps provided within 18 months

320 Budget: Staff time

FY 20 Budget:

320 Funds: Staff time

Estimated Total Budget: Staff time
~$253,000 in kind from partners for CCHMN

Outcomes:

- Coordinate monthly water quality sampling and assist with seagrass monitoring each year and seagrass aerial mapping every 2-5 years
- Provide consistent region-wide, technically sound water quality and seagrass data needed to asses resource status, trends and complex interactions
- Provide consistent region-wide, technically sound water quality and seagrass data for resource management, regulatory programs, including TMDLs and water quality standards, and education of the public and elected officials throughout CHNEP
- Provide access to water quality and seagrass data to partners via CHNEP Water Atlas
- Provide data needed to asses effectiveness of protection and restoration efforts
- Increase collaboration on monitoring and mapping between SWFWMD and SWFWMD

CWA Core Program addressed: (1) establishing water quality standards,
(2) Identifying polluted waters and developing restoration plans, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 3.2 Ongoing Project: CHNEP Water Atlas Maintenance

Project Objective: To ensure continuing access to technical information from throughout the CHNEP Study Area to scientists, resource managers and users, elected officials and the public through a user-friendly web-based tool. The resulting data, maps and graphs are easily accessible for use to evaluate resource conditions, answer site and topic specific questions, and convey scientific information in an understandable manner to support effective management programs and restoration projects.

Project Description: CHNEP contracts on an annual basis with the University of South Florida (USF) to maintain and enhance the *CHNEP Water Atlas*. The Water Atlas is a web-based, data management and mapping system that provides historical information, scientific data, water resource maps, resource management actions, volunteer opportunities and current events from throughout the CHNEP Study Area. Tools are available to map, analyze and graph data related to specific locations and topics to assists partners with identifying, prioritizing and implementing projects that address CCMP water quality, habitat, hydrology and stewardship goals. CHNEP support includes maintenance, improvements and enhancements of all the Water Atlas components, including home page design and data base updates.

CCMP Elements Implemented: WQ-1, WQ-2, HR-1, FW-1, FW-2, FW-3, PE-1, and PE-3.

Outputs/Deliverables Milestones:

- Management of all data sources, web-site hosting, maintenance, up-dates and enhancements, and quarterly and annual reports
- Water quality data uploaded from the state water quality data base every 6 months
- Water quality contour maps up-dated annually
- Water Clarity Report Card updated annually
- Events up-dated as appropriate
- Technical documents posted as they are provided

320 Budget: $55,620

FY 20 Budget:

320 Funds: $52,000 + Staff time

Estimated Total Budget: $55,620

Outcomes

- Post and provide access to water quality data up-dates every 6 months
- Post and provide access to water quality contour map up-dates annually
- Post and provide access to Water Clarity Report Card up-dates annually
- Post and provide access to data analyses, maps and graphs as requested
- Provide data entry access to volunteer oyster monitors weekly, bi-monthly and every 6 months
- Provide data needed to assess effectiveness of protection and restoration efforts as requested
- Increase collaboration among resource managers and agencies from throughout the CHNEP Study Area

CWA Core Program addressed: (2) identifying polluted waters and developing restoration plans, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 3.3 New Project: CHNEP Water Atlas Improvements

Project Objective: Sufficient long-term technically-sound data to support identification of waterbody improvements or impairments, pollutant limits, and corrective management actions to improve water quality.

Project Description:

- Habitat Restoration Needs (HRN)/Habitat Resiliency to Climate Change (HRCC) Interactive mapping tool: Data from this HRN project will be made readily available to the public and any interested stakeholders though the CHNEP Water Atlas. It is anticipated that the HRN data will be integrated into the CHNEP Water Atlas Advanced Mapping Application in the form of an ArcGIS storymap. This web-based application is capable of presenting habitat and other data in a GIS based platform for easy viewing. Users will be able to access the full set of spatial data by simply clicking on the list of layers on the mapping application and will be able to interactively view the results of the HRN project.

- Water Quality Dashboard: A map-based water quality dashboard will present recent water quality sampling data for waterbodies within the CHNEP. The application will utilize the same framework used for the Orange County Water Atlas (see the dashboard at: http://www.orange.wateratlas.usf.edu/water-quality-dashboard/). Waterbodies can include bay segments, river segments and lakes. Easy-access filters can be designed to show waterbodies with a WQ value exceeding a threshold; waterbodies within specific basins; waterbody type, or others.

- Numeric Nutrient Criteria Calculator: The FDEP Numeric Nutrient Standards specify region specific and sometimes site specific criteria (NNC) to determine if a bay, lake/pond or stream (WBID) passes the standard. The NNC calculation for water quality is a multi-step process that evaluates annual geometric mean chlorophyll a, phosphorus and nitrogen based on thresholds that depend on the long-term color and alkalinity of a lake, or the location in a specific watershed region for a stream. The NNC can be thought of as a series of if-then evaluations to determine whether a WBID will pass or fail the standard. Using the data already available in the Water Atlas, USF can implement a NNC Calculator tool on the Water Atlas for CHNEP staff (or others) to evaluate the status of waterbodies and WBIDs on a regular basis. The Calculator will be designed as a password-protected series of webpages so that local water management staff (CHNEP partners) will be able to see the current status of impairments within the region. The tool will serve as a pro-active alert system.

- Lake Okeechobee Conditions: Lake Okeechobee has had and will continue to have serious implications for CHNEP waterbodies, but the expanded region does not actually include the lake. Thus, the lake will not be on the Water Atlas. To remedy this problem, a set of pages will be created on the CHNEP Water Atlas to include a focus on current conditions and trends in the lake. Monitoring data from FDEP, SFWMD and USGS will be incorporated into the Atlas database (including near-realtime water levels data) and presented on these dedicated pages. Additional content such as management reports, plans, and spatial datasets can also be included. This new section will allow residents and water managers to easily access the status and conditions in the lake.

- Improved data graphs and new parameters: The current bay/estuary pages on the CHNEP Atlas display only a limited number of water quality parameters and the graphing technology is old. Newer technology and additional water quality parameters have been integrated into the Sarasota Water Atlas Bay Conditions pages (http://www.sarasota.wateratlas.usf.edu/bay-conditions/report/99/lower-lemon-bay/2018/). Although rated "conditions" are not needed, the additional water quality parameters and the better graphing technology will be implemented on

the CHNEP Water Atlas bay pages. For example, new parameters can include: color, DO saturation, TKN and other nitrogen species, pH, specific conductance, temperature, or others. The new graphing will display statistics and basic trendlines.

CCMP Elements Implemented: WQ-1, WQ-2, and FW-1.

Partners and Roles:
CHNEP (Funder and Lead for data input to Water Atlas), SWFWMD, SFWMD, FDEP (Lead for data sufficiency and QA/QC), FDACS, FWC, CHAP, EBAP, SCCF, Calusa Waterkeeper, FGCU, County and Municipal governments.

Outputs/Deliverables Milestones:

- HRN and HRCC Interactive mapping tool (Storymap) on the CHNEP Water Atlas
- Water Quality Dashboard
- Numeric Nutrient Criteria Calculator
- Lake Okeechobee Conditions: Improved data graphs and new parameters

Cost of Project:
HRN/HRCC Interactive Storymap or Interactive Mapper: $4,000
Water Quality Dashboard: $2,000
Numeric Nutrient Criteria Calculator: $4,000
Lake Okeechobee Conditions: $4,500
Improved data graphs and new parameters: $2,500

320 Budget: $0

FY 20 Budget:

Grant Funds: $17,000

Estimated Total Budget: $17,000

Outcomes

- Continue to assist with collection of water quality data throughout the Program area and support uploading and archiving of data in standard common public databases. Continue to analyze and identify water quality status and trends with appropriate modeling methods and tools. Identify water quality sampling gaps to ensure adequate consistent sampling across the Program area. Identify, study, and monitor emerging pollutants of concern.
- Sufficient long-term technically-sound data to support identification of waterbody improvements or impairments, pollutant limits, and corrective management actions to improve water quality.
- Updates of water quality data to the Water Atlas at least twice per year, and continuous public online access to water quality data via the Water Atlas.

CWA Core Program addressed: (2) identifying polluted waters and developing restoration plans, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 3.4 Ongoing Project: CHNEP Economic Valuation Study

Project Objective: The Coastal and Heartland National Estuary Partnership (CHNEP) desires to contract with a firm with expertise in economic valuation studies to conduct an Economic Valuation Study of the approximately 5,400 square mile CHNEP area.

Project Description: The focus of the economic valuation analysis is to quantify the economic activity tied to natural resources (water primarily, as well as wildlife and habitat protection). This would be in terms of tax revenues, jobs, tourism, real estate revenues and other income generating activity. The natural resources within the CHNEP program area play a key role in the popularity and growth of the region. As population pressure grows, it is important to improve understanding of the connection to these resources to the economy in order to better meet the needs of the public.

CCMP Elements Implemented: FW-3 and PE-4.

Outputs/Deliverables Milestones:

- Data and Model Input Technical Memorandum
- Economic Impact and Fiscal Impact Modeling & Analysis Technical Memorandum
- Non-Market Values Hedonic and Distributional Analysis Technical Memorandum
- Draft Economic Valuation Report
- Revised Final Report, presentation, and summary

320 Budget: $94,299 FY19 No Cost Extension funds

FY 20 Budget:

Estimated Total Budget: $94,299 FY19

Outcomes

- The Final Report will quantify economic activity tied to natural resources in the overall CHNEP Study Area (based on Fiscal Impact Model /Economic Impact Model), plus break out the results by each basin. Additionally, it will include the results of the Distributional Analysis (overall and by basin), including funding mechanisms in creating more economic equity amongst stakeholders in the ongoing protection and restoration of natural resources in the CHNEP area.

CWA Core Program addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 3.5 New Project: Lower Charlotte Harbor Flatwoods Hydrologic Restoration Initiative

Project Objective: To develop a science based, data driven, Strategic Hydrological Planning Tool that will provide guidance to resource management agencies related to the appropriate restoration and management of surface waters currently flowing from the Cecil Webb/Babcock Wildlife Management Area and Yucca Pens Unit Wildlife Management Area through tidal creeks discharging into eastern Charlotte Harbor and the Caloosahatchee River.

Project Description: This project will collect and synthesize data using an integrated, three-dimensional, hydrological model to determine the appropriate hydropatterns, timing and quantity of water flows required to improve the hydrological conditions and habitat within the (80,000 Acres) Cecil Webb/Babcock and Yucca Pens Wildlife Management Areas (WMA) both managed by the Florida Fish and Wildlife Commission and the creeks flowing into the eastern Charlotte Harbor and Caloosahatchee estuaries. The outcomes from the Future conditions modeled scenarios will be known as the Lower Charlotte Harbor Flatwoods 'Strategic Hydrological Restoration Planning Tool' and Report. The Report will provide guidance to local governments and agencies for how best to restore connections and manage surface waters flowing from the Babcock-Webb WMA and Yucca Pens Unit through tidal creeks discharging into eastern Charlotte Harbor and the Caloosahatchee River.

CCMP Elements Implemented: HR-1, HR-2, and HR-3.

Partners and Roles: CHNEP (Funder), Charlotte County (Funder), SWFWMD, SFWMD, FWC, etc.

Outputs/Deliverables Milestones:

- Groundwater and Flow Monitoring Plans and Monitoring Equipment Installation
- Updated MIKE SHE/MIKE 11 hydrological model files
- Ecologic Studies
- Integrated ground/surface water Model Results
- Lower Charlotte Harbor Flatwoods 'Strategic Hydrological Restoration Planning Tool' and Report

320 Budget: $0

FY 20 Budget:

FDEP NRDA Funds: $532,283
SWFWMD FY20 Funds: $39,509
320 Funds: $0

Estimated Total Budget: $571,792

Outcomes

- A Strategic Hydrological Planning Tool which will summarize the results of each model run and provide recommendations on priority restoration and management projects and actions, the resulting benefits and approximate implementation costs.

CWA Core Program addressed: (2) identifying polluted waters and developing restoration plans to restore them, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 3.6 Ongoing Project: Quantifying the Water Quality Benefits of Submerged Aquatic Vegetation (SAV) Restoration

Project Objective: This project will quantify the nutrient removal capacity of submerged aquatic vegetation (SAV) in the CHNEP area. It will focus on tapegrass (*Vallisneria americana*), a species native to the area and historically abundant in freshwater and low-salinity estuarine habitats. *Vallisneria americana* has been identified as a Valued Ecosystem Component for Everglades restoration and is the species used to establish minimum flows and levels for the Caloosahatchee River Estuary. This project has direct applications for evaluating the effectiveness of SAV for nutrient removal in stormwater treatment systems, canals, and natural water bodies. It also has implications for NPDES permit compliance, BMAPs, and wet detention pond design BMPs. The project links with the Citizen Seagrass Gardening project implemented in 2018 to inform the public and involve citizens in using personal BMPs in local waterways.

Project Description: The project will have two components: 1) a series of aquatic mesocosm experiments at Florida Gulf Coast University's Buckingham facility, and 2) a field component making use of a large-scale *Vallisneria americana* restoration project currently underway in the Caloosahatchee River Estuary. The combined field-mesocosm approach will provide experimental control as well as ecological realism. Mesocosm experiments at the Buckingham facility will involve manipulating nitrogen and phosphorus dosing in a recirculating system with *Vallisneria americana* plantings (and in unvegetated control treatments), and tracking the flux of those nutrients through the biotic components of the system. Nitrogen and phosphorus will be measured in the plant tissue, epiphytes, soils, and water column, and nutrient removal due to sequestration and transformation will be quantified. The field study will use a similar approach, sampling the nutrient constituents in the plant tissue, epiphytes, soils and water to provide real data from an impaired water body inferring quantities of nutrient removal by the restored SAV.

CCMP Elements Implemented: WQ-1, WQ-3, WQ-5, PE-1, PE-3, and FW-1

Partners and Roles: CHNEP (Funder), Florida Gulf Coast University (Co-PI for Research and Facilities), Angler Action Foundation (Public Outreach and Education), Sea and Shoreline LLC (plant sourcing and support) and Johnson Engineering, Inc. (Co-PI for research and project management).

Outputs/Deliverables Milestones: This project will result in a formal Technical Report to CHNEP summarizing the experimental results based on NELAC certified laboratory data. The report will identify the nutrient (TN, TP and C) assimilation capacity of SAV beds being restored in the Caloosahatchee River estuary with applications to freshwater and upper estuarine systems throughout the CHNEP study area. Additional products from this work are expected to include formal presentations at the next CHNEP Watershed Summit, the next Greater Everglades Ecosystem Restoration (GEER) Conference in 2021, and a peer-reviewed journal article. This project will likely result in numerous presentations to agencies and municipalities for the purpose of stormwater treatment enhancements, NPDES and BMAP actions, and habitat improvements that benefit water quality.

320 Budget: $45,000 FY19 No Cost Extension Funds

FY 20 Budget: $0

320 Funds: $0

Estimated Total Budget: $45,000 FY19

Outcomes:

1. Nutrient removal rates for the SAV species *Vallisneria americana* in the Southwest Florida environment.
2. Total nutrient removal achieved by the large scale *Vallisneria americana* restoration effort currently underway in the Caloosahatchee Estuary quantified.
3. Easily-cited statistic for SAV nutrient removal generated. It will be analogous the widely-cited statistics for oyster filtration rates that have been used to successfully bolster support for oyster restoration projects. This should increase public interest in SAV restoration and conservation, particularly in waterways and along shorelines of developed areas, e.g., in stormwater conveyances, wet detention ponds, and canals where the ecosystem services of vegetation tend to be underappreciated.

CWA Core Program addressed: (2) identifying polluted waters and developing restoration plans to restore them, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting Large Aquatic Ecosystems.

Task 4 Watershed Coordination

Work Plan Objective: To develop and update a CHNEP Habitat Restoration Needs Plan and participate in activities which will implement this plan and CCMP objectives and actions relating to restoration. To support development and implementation of Everglades Restoration.

Description: Provide staff support for restoration mapping efforts. Tracking of restoration plan implementation is performed annually through the annual development of the Government Performance and Review Act (GPRA) report. This task also includes staff participation in watershed initiatives such as: Southern Water Use Caution Area (SWUCA) Recovery Strategy, Minimum Flows and Levels, Reasonable Assurance Plans, Basin Management Action Plans, Southwest Florida Comprehensive Watershed Management Plan, Charlotte Harbor Flatwoods Initiative, Lehigh Watershed Initiative, South Lee County Watershed Initiative, and Caloosahatchee River Watershed Protection Plan. Southwest Florida Estuarine Restoration Team (SWERT) facilitates region-wide estuarine habitat restoration that addresses endangered Smalltooth Sawfish critical habitat. CHNEP also participates in state and federal processes to identify landscape scale conservation corridors with public and private partnerships to provide habitat and species migration and climate change adaptation. As opportunities arise, CHNEP assists partners in conducting restoration activities.

CHNEP participates in Everglades Restoration projects relevant to the CHNEP Study Area; this includes participating on the Science Coordination Group on behalf of Southwest Florida.

CCMP Elements Implemented: All

Partners and their roles:
CHNEP, Florida Gulf Coast University, Florida SeaGrant, Coastal Wildlife Club, Lee County Parks and Recreation Department, Lee County Department of Natural Resources, Charlotte Harbor Environmental Center, Sanibel-Captiva Conservation Foundation, Friends of Charlotte Harbor Aquatic Preserves, Lee County Conservation 2020 Program, Calusa Land Trust, City of Fort Myers, Mote Marine Lab, Sarasota Estuary Program, and Tampa Bay Estuary Program.

Outputs/Deliverables Milestones

- Habitat Restoration Needs Update and Habitat Resiliency to Climate Change Project
- Alligator Creek Restoration Project
- GPRA Report
- Public/Private Conservation Cooperative Support
- Watershed Management Plans, Verified List review
- Minimum Flows and Levels review
- Charlotte Harbor Flatwoods Initiative, Lehigh Watershed Initiative, South Lee County Watershed Initiative
- CHIMMP and OIMMP
- Marine Debris, micro-plastics project participation
- Science Coordination Group

320 Budget: $8,561

FY 20 Budget:

Staff:	
320 Funds:	$8,561
FDEP Funds:	$40,475
SWFWMD Funds:	$12,500

Estimated Total Budget: $61,536

Outcomes

- To most effectively restore water quality, hydrology and habitat, CHNEP participates in a variety of partnership resource management and planning activities. Funding under this program supports CHNEP staff review of watershed assessments and plans and provision of maps and data to partners which guide restoration priorities and track implementation of projects
- CHNEP will provide annual summaries of partners' restoration activities through the GPRA report and will assist partners with compiling and analyzing data to develop and implement technically sound, consensus-based resource management plans
- Increase in the number and effectiveness of implemented water quality and resource management Best Management Practices (BMPs), plans and restoration activities

CWA Core Program addressed: (2) identifying polluted waters and developing restoration plans to restore them, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting Large Aquatic Ecosystems.

Task 4.1 Ongoing Project: Submerged Aquatic Vegetation Restoration

Project Objective: To ensure development of technically sound Submerged Aquatic Vegetation (SAV) restoration targets; implement restoration initiatives and projects which restore and protect SAV throughout the CHNEP estuaries and tidal rivers.

Project Description: CHNEP coordinates and participates in collaborations to develop technically sound SAV restoration targets and implement restoration projects throughout the Study Area. The CHNEP Management Conference adopted SAV targets in 2005 and refined targets in 2009, with the understanding that additional field assessment is needed to capture full extent of SAV distribution in the tidal rivers due to naturally highly colored river water. CHNEP convened the Caloosahatchee River SAV Targets Working Group (CRSAVTWG) in 2013 to begin developing sound SAV targets for the tidal and some oligohaline reaches of the Caloosahatchee River. CHNEP also participates in the Southwest FL Seagrass Working Group and FWC Seagrass Integrated Monitoring and Mapping (SIMM) technical team.

CCMP Elements Implemented: FW-1, FW-2, PE-1, PE-2, and PE-3.

Partners and Roles: CHNEP coordinates the TAC subcommittees and CRSAVTWG. Together these collaborative groups include: FDEP Charlotte Harbor and Aquatic Preserves, FWC, SWFWMD, SFWMD, Lee County, Charlotte County, Sarasota County, SCCF, FGCU and Johnson Engineering.

Outputs/Deliverables:

- Exchange technical information, monitoring and mapping methods, and emerging SAV issues
- Reporting and showcasing success of SAV restoration projects

Estimated Milestones:

- Exchange of SAV information ongoing

320 Budget: Staff time.

FY 20 Budget

320 Funds: Staff time

Estimated Total Budget: Staff time

Outcomes

- Protect and restore natural systems, obtain sufficient region-wide water quality, biological and physical data and analyses that are needed to understand the status, trends and complex interactions of the systems
- Development of SAV Targets for Caloosahatchee River
- Adaptation of SAV restoration projects based on lessons learned
- Increase SAV seed source in the Caloosahatchee River

CWA Core Program addressed: (5) protecting wetlands and (6) protecting coastal waters through the National Estuary Program.

Task 4.2 Ongoing Project: Warm Mineral Springs Run Restoration

Project Objective: To improve passage for the federally-threatened Florida manatee to critical warm water refuge habitat, stabilize areas of eroding shoreline, and replace invasive plant species with native riparian vegetation.

Project Description: The long-term conservation of Florida manatees (*Trichechus manatus latirostris*), a federally-threatened species, relies on having enough healthy, suitable habitats available throughout their range in Florida. Warm-water habitat is essential for manatee survival during the winter and maintaining sufficient regional networks of warm-water sites may be the single most important habitat issue to face the Florida manatee population in the future. Springs provide critical and dependable warm-water habitat and the protection and restoration of these habitats is critical to ensuring protection of the Florida manatee. Warm Mineral Springs is located in southwest Florida in Sarasota County near the city of North Port and within the Myakka basin of the CHNEP program area. Over 100 Florida manatees have been documented using Warm Mineral Springs Creek as a refuge during the winter months; making this location the largest, and arguably the most important natural warm-water refuge in southwest Florida. Historical and current land use alteration and management, bank erosion, excessive sedimentation, and invasive riparian plant species are identified as the primary factors degrading the spring run. The restoration of Warm Mineral Springs run will provide multiple benefits to this system. Removal of sediments will provide better manatee access to vital warm-water habitat, as well as increasing the volume of warm-water habitat. Shoreline restoration and stabilization will decrease erosion and sedimentation reducing the need for future maintenance work in this system.

CCMP Elements Implemented: HR-1, HR-3, FW-1, and FW-2. .

Partners and Roles: U.S. Army Corps of Engineers - completed engineering and modeling through Planning Assistance to States cost share agreement ($187,500.00); Sarasota County - technical assistance in project design and community outreach, and through provision of access to construction sites and venues for project meetings; FWC - completion of engineering services and permitting (>$200,000.00); The City of North Port - technical assistance in project planning.

Outputs/Deliverables Milestones:

- Project Management
- Stakeholder meetings
- Permit Application services and Final Design plans for dredge and de-watering will be completed toward restoration and enhancement of approximately 2 miles of Myakka River headwater tributary to establish more natural hydrologic conditions and allow enhanced manatee access critical warm-water habitat.

320 Budget: $0

FY 20 Budget: $0
Local Funds: $8,990
Grant: $56,000 FY19

Estimated Total Budget: $64,990

Outcomes: Final design plans and permitting will allow project to proceed to implementation. Fully implemented, manatee access to critical warm-water habitat will be improved and more natural hydrologic conditions will be restored within the Myakka basin of the CHNEP program area.

CWA Core Program addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 4.3 Ongoing Project: Gateway to Myakka River State Park- Marsh Restoration

Project Objective: To restore three acres of floodplain marsh and one mile of river front on the Myakka River at the headwaters of Myakka River State Park, and to communicate conservation methods and impact to the public, influencing a community conservation ethic.

Project Description: To restore floodplain marshes on the Myakka River and influence the community's conservation ethic by communicating conservation methods and impact to the public.

Conservation Foundation, the USDA Natural Resources Conservation Service (NRCS), and the Southwest Florida Water Management District (SWFWMD) acquired fee and conservation easement interests totaling 2,408 acres and protecting four miles of the Myakka River within Manatee County. Much of this work surrounds the 2,500-acre Tatum Sawgrass Marsh, a floodplain marsh similar to Upper Myakka Lake, but more than three times its size. In June 2019, Conservation Foundation and NRCS will complete the protection of an additional 534 acres, and Conservation Foundation will finish a restoration plan in partnership with the National Fish and Wildlife Foundation (NFWF) and NRCS. This project will be implemented over the next few years using NRCS funds obligated for this purpose. While restoration of the Tatum Sawgrass is underway, Myakka River State Park (MRSP) is simultaneously pursuing restoration of Upper and Lower Myakka Lakes and Big Flats.

CCMP Elements Implemented: FW-1 and FW-2.

Partners and Roles: Conservation Foundation of the Gulf Coast - Project design and oversight; Beautiful Ponds, Inc. – invasive plant removal and native plantings; Myakka River State Park / FDEP - Technical input; National Fish and Wildlife Foundation – hydrologic restoration modelling of Tatum Sawgrass; The following partners are associated with Tatum Sawgrass marsh acquisition and restoration: USDA Natural Resources Conservation Service; Southwest Florida Water Management District; Disney Conservation Fund; Selby Foundation; and numerous other private landowners, foundations, and donors.

Outputs/Deliverables Milestones:

(1) Native plants installed in 2021
(2) Exotic plants treated along 4 acres of property and 1 mile of riverfront in 2020
(3) Follow-up control performed on exotic plants 4 acres of property and 1 mile of riverfront in 2021

320 Budget: $25,763.50 FY19 No Cost Extension Funds

FY 20 Budget: $0

Estimated Total Budget: $25,763.50 FY19

Outcomes:

(1) Three acres of floodplain marsh will be planted with native plant species
(2) One mile of river shoreline will be controlled for exotic grass species
(3) Achieve the objectives of the Wild and Scenic Myakka River Management Plan
(4) Achieve the objectives of the Myakka River State Park Unit Management Plan

CWA Core Program addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 4.5 New Project: South Lee County Watershed Initiative Hydrological Modeling Project

Project Objective: The goal of this project is to develop a science-based, data-driven, strategic hydrological restoration planning tool that will provide guidance to resource management agencies related to the appropriate restoration and management of surface waters currently flowing from the South Lee County Watershed (SLCW) comprised of the Estero River, Spring Creek and Imperial River watersheds, and discharging into the Estero Bay Aquatic Preserve. The conversion of native wetland habitats to agriculture or development, installation of drainage canals, surface mining, and construction of major roadways such as Corkscrew Road, SR. 82, US 41 and I-75, has significantly altered the historic sheet flow from the southern region of Lehigh Acres south to the Corkscrew Sanctuary and southwest to Estero Bay – resulting in flooding, habitat changes, water quality degradation, and decreased water storage. Modeling is needed to assess the natural system water level and flow needs in the remaining portion of the Estero Bay watershed not covered in the efforts to upgrade MIKE SHE/MIKE 11 model of the Big Cypress Basin for the Corkscrew Swamp Sanctuary.

Project Description: This project will expand and enhance the MIKE SHE/MIKE 11 model for the Big Cypress Basin used to conduct modeling for the Corkscrew Swamp Sanctuary area. It will expand the modeling, mapping, and data collection work to include the entire South Lee County Watershed. This integrated surface/ground water model, will incorporated both groundwater and flow monitoring data along with and ecological data collected on high water marks to determine the appropriate hydropatterns, timing and quantity of water flows required to improve the hydrological conditions to wetlands, flowways, tributaries and coastal waters as well as habitat. The work will be done in partnership with SFWMS and other members of the South Lee County Watershed Initiative.

CCMP Elements Implemented: HR-1, HR-2, and HR-3.

Outputs/Deliverables Milestones:

- Groundwater and Flow Monitoring Plans and Monitoring Equipment Installation
- Updated MIKE SHE/MIKE 11 hydrological model files
- Ecologic Studies
- Integrated ground/surface water Model Results
- Updated Land Use Files
- South Lee County Watershed Initiative 'Strategic Hydrological Restoration Planning Tool' and Report

320 funds:	$141,839 No Cost Extension Funds
SFWMD:	$50,000
FY20 Funds:	$3,457
Estimated Total Budget:	$195,296

Outcomes

- Data to be incorporated into an integrated surface/ground water hydrologic model that is capable of simulating both wet and dry season water levels and flows in the Estero and Imperial River watersheds and will be sufficient for evaluating wetland hydroperiods and depth ranges in the South Lee County Watershed adjacent to Corkscrew Swamp Sanctuary.

- A Strategic Hydrological Planning Tool which will summarize the results of each model run and provide recommendations on priority restoration and management projects and actions, the resulting benefits and approximate implementation costs.

CWA Core Program addressed: (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

CWA Core Program addressed: (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 4.7 New Project(s): Habitat Restoration Needs Phase II

Project Objective: The purpose of the Project is to apply the methodology used to create the CHNEP Habitat Restoration Needs (HRN) Plan and resulting Report that was developed for the historical CHNEP area, and apply it to the newly expanded portion of the CHNEP area. The results of this project will identify habitat Preservation/Conservation and Reservation Opportunities and acreages, and Restoration/Management Target acreages priorities throughout the CHNEP expansion area needed to reach the habitat restoration vision and goals – removing non-restorable already urbanized/developed areas from the analysis. The report created by this project will serve as an addendum to the original HRN Report.

Project Description:

The HRN Plan articulates CHNEP's habitat restoration vision for the next 50 years of "A diverse environment of interconnected, healthy habitats that support natural processes and viable and resilient native plant and animal communities." (CHNEP 2019). The Plan identifies Preservation/Conservation and Reservation Opportunities, as well as Management/Enhancement and Restoration Targets, in each CHNEP basin. Full implementation of the Plan will have substantial positive impacts on the long-term sustainability of water quality, water quantity, natural systems, and species populations. The overarching goal of the Plan is to increase the acreages of native habitats in the CHNEP area, both strategically and opportunistically.

The body of the Report will include all of the following for the project area: habitat status and trends analysis; existing preservation and conservation lands; proposed land acquisition priorities; listed species critical habitats and migratory corridors; river floodplain functions; long-term trends in freshwater flows; historical soils distributions; and will factor in work done to model how non-tidally connected habitats targeted for restoration may be affected by hydrological alterations due to climate change.

Major recommendations in Conclusion will include:

- Preservation/Conservation and Reservation Opportunities acreages by Major Habitat Types.
- Management/Enhancement and Restoration Targets acreages by Major Habitat Types.

The HRN Plan will coordinate with FWC's Critical Habitat Conservation Plan to identify multi-partner opportunities and priorities and it will assist local, regional, state and federal agencies, and organizations to identify, plan, and implement habitat restoration and land acquisition projects needed to achieve CHNEP habitat restoration goals and vision.

Project Uses: The Project deliverables will coordinate with FWC's Critical Habitat Conservation Plan to identify multi-partner opportunities and priorities and it will assist local, regional, state and federal agencies, and organizations to identify, plan, and implement habitat restoration and land acquisition projects needed effectively to achieve CHNEP habitat restoration goals and vision.

CCMP Elements Implemented: FW-1, FW-2

Partners and Roles: CHNEP and its contractor are working with the CHNEP Management Conference, local and regional resource managers and other partners to develop the habitat restoration vision and goals.

Outputs/Deliverables Milestones

The overall Project objective is to develop the CHNEP habitat restoration vision and goals for the study area expansion area, for each major habitat type and by four major categories: Preservation/Conservation

Opportunities, Reservation Opportunities, Management/Enhancement Targets, and Restoration Targets. Specific Project objectives (further defined in the Project Tasks below) include:

- Document Status and Trends of Habitats. Analyze and document habitat status and trends in the CHNEP Expansion area with the best available technologies and analytical tools. This will be done with the consensus from the CHNEP Technical Advisory Committee (TAC) and Habitat Conservation Subcommittee (HCS) and the CHNEP staff.
- Document Completed, Ongoing and Planned Habitat Restoration, Conservation and Land Acquisition Projects. Document ongoing and planned habitat restoration and conservation and land acquisition projects from all known sources in the CHNEP expansion area.
- Use 'Additive Hybrid' Approach from HRN Phase I to develop 'Opportunity' and 'Target' acreages for habitat types in the CHNEP expansion area.
- Prepare Expansion Area Addendum for the CHNEP Habitat Restoration Needs Plan. The Contractor will prepare and present the CHNEP Habitat Restoration Needs Plan addendum for the expansion area to the CHNEP Management Conference for approval.
- Gather Stakeholder Input. The report will be presented to the Management Conference Committees for comment.
- Manage the Project. The Contractor, CHNEP staff, and Management Conference partners will work extensively and synergistically to complete the Project.

320 Budget: $73,423 FY19 No Cost Extension Funds

FY 20 Budget:
320 Funds: $0

Estimated Total Budget: $73,423

Outcomes
CHNEP Habitat Restoration Needs Plan Addendum for the CHNEP Expansion Area

CWA Core Program addressed: (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

Task 5 Policymaker Education

Work Plan Objective: Support policymaker education and legislative action to support the implementation of the CCMP; implementing the Policy Review Procedures.

Description: This project is to support staff time to conduct policymaker education that implements the CCMP. Additionally, membership dues ($4,500) in the Association of National Estuary Programs (ANEP) are included in this task as they are not eligible for EPA funding.

CCMP Elements Implemented: PE-4.

Outputs/Deliverables, Milestones

- Letters of support for legislation as directed
- In-person meeting with policymakers to educate them about CHNEP and its CCMP, as well as funding and support needed for its implementation
- Continue ANEP membership
- Provide input on CCMP topics as requested by policymakers on the Management Conference
- Legislative updates to Management Conference as appropriate

320 Budget: $0

FY 20 Budget:

Local partners:

Staff:	$8,799
ANEP:	$4,500

Estimated Total Budget: $13,299

Outcomes

- Informed policymakers as the CHNEP and the CCMP recognized and utilized as a resource by legislators (local, state and Federal) and their staff
- Improved policies and funding that assist in implementing the CCMP

CWA Core Program addressed: (1) establishing water quality standards, (2) identifying polluted waters and developing restoration plans, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, and (6) protecting coastal waters through the National Estuary Program.

Potential Identified FY21 Projects if Added Funding Becomes Available

CHNEP Caloosahatchee Cyanobacteria Rapid Response Pilot Program

Project Objective: To develop a rapid response pilot program to remove cyanobacteria and nutrients from the Caloosahatchee River.

Project Description: Cyanobacteria and red tide are reoccurring problems in some waters in the CHNEP area. New approaches and technologies for rapid response remediation are needed. Given that cyanobacteria feeds on excess nitrogen and phosphorus, it appears that the Open-Cell foam technology may be a suitable rapid response technology worthy of a pilot program to address the cyanobacteria outbreak in the Caloosahatchee River - as it has proven to be very good at absorbing/sequestering particle reactive phosphorus and metals along with hydrocarbons and other contaminants including the cyanobacteria itself and toxins produced by cyanobacteria. This project would be to conduct a larger pilot project to deploy the remediation technology, doing pre and post-deployment water quality monitoring to record its efficacy in uptaking nutrients, cyanobacteria, and microcystis toxin.

CCMP Elements Implemented: WQ-5

Partners and Roles: CHNEP (funder), Sea and Shoreline Aquatic Restoration (field technicians), Florida Gulf Coast University (researchers), and AquaFlex Holdings LLC (remediation technology proprietors).

Outputs/Deliverables Milestones

- Open-Cell foam eelgrass and environmental indicators to be deployed in the water column during a cyanobacteria bloom, and then submitted to approved Florida laboratories for analysis of cyanobacteria, phosphorus, toxins, and other substances as deemed necessary.

Estimated Total Budget: $65,550

Outcomes

- Removal of problem cyanobacteria
- Research results to determine efficacy of remediation technology tested

CWA Core Program addressed: (2) identifying polluted waters and developing restoration plans, (4) addressing diffuse, nonpoint sources of pollution, (5) protecting wetlands, (6) protecting coastal waters through the National Estuary Program, and (7) protecting large aquatic ecosystems.

COMPLETED FY19 MAJOR PROJECTS AND ACTIONS

FY19 Public Outreach Grant Awards

AWARDEE	PROJECT	AMOUNT FUNDED	MATCH/ Leverage
Bonefish Tarpon Trust	Post-Restoration Monitoring of Juvenile Tarpon & Snook at Coral Creek Preserve	$3,000	$50,082
Stocking Savvy and Beautiful Ponds	Filamentous Algae – Multimodel Biological Control with Native Florida Fish at East Village Community	$1,800	$6,000
Punta Gorda Isles Civic Association	The Last Straw	$3,000	$4,500
City of North Port	Encouraging the Non-use of Fertilizers Year-Round	$900	$6,074
	Total	**$8,700**	**$66,656**

FY19 Micro-Grant Awards

AWARDEE	PROJECT	AMOUNT FUNDED	MATCH/ Leverage
University of Florida	Microplastic Awareness Program	$1,000	$3,357.30
Myakka River Management Coordinating Council (MRMCC) Website	MRMCC Website Maintenance	$220	$0
Weavers of Char-Lee	Leviathan – Sea Dragon Marine Debris Sculpture at 20th Annual Nature Fest	$1,000	$1,000
Keep Charlotte Beautiful	2019 Great American Cleanup	$500	$5,217.19
Church Environmental	Caloosahatchee Wading Bird Nest Surveys	$950	$3,950
Cape Coral High School	Hawking's Pavilion and Cooter's Pond Environmental Education Project	$841.10	$1,958.90
	Total	**$4,343.32**	**$14,703.39**

Completed Project: CCMP Revision Phase I
CHNEP staff, Contractor: Shafer Consulting, Management Committee
This project was to update the CHNEP Comprehensive Conservation and Management Plan (CCMP) fully with Management Conference and public input to reflect new EPA CCMP guidance requirements, new CHNEP boundary and name, and revised actions and activities to provide a 5-year strategic plan for the CHNEP partners. The approved final draft was sent to EPA on June 1, 2019.

Completed Project: Habitat Resiliency to Climate Change in the CHNEP Study Area
CHNEP staff, Contractor: ESA, Management Committee.
This project was completed in 2018 and the modeling results mapping vegetative shifts from climate change factors including sea level rise was applied in the formation of the Habitat Restoration Needs project methodology in 2019.

Completed Project: Habitat Restoration Needs Phase I.
CHNEP staff, Contractor: ESA, Management Committee.
This project was completed in July 2019 and defined Preservation/Conservation Opportunities acreages, Reservation Opportunities acreages, Restoration Targets, Management/Enhancement Targets, for the original CHNEP area. These targets were then incorporated into the Southwest Florida Water Management District's Surface Water Improvement & Management (SWIM) Plan for Charlotte Harbor.

Completed Project: *Adventures in the Charlotte Harbor Watershed* E-learning Module Development
CHNEP staff, Contractor
This project is underway and is anticipated to be completed in September 2019.

Completed Project: Citizen Seagrass Gardening
CHNEP staff, Contractor: Sea & Shoreline, LLC, Calusa Waterkeeper, citizen volunteers
This project completed in February of 2019 involved planting seagrass at the restoration sites. The results demonstrated that it cannot only survive but thrive in the less than ideal water conditions. Based on previous successful Tape Grass restoration projects within the local region (10% of the success rate of a restoration project in nearby Lake Trafford) it is anticipated that the 17.5 m^2 of Tape Grass and Widgeon grass shoots included in the 5 restoration sites (25 cages) will continue to expand, and could potentially provide us an area as large as 7.5 acres of seagrass. In addition to the potential for re-establishing a seed source in the Caloosahatchee, further growth of the project sites could mean additional acreages of seagrasses in the Caloosahatchee to filter water, store carbon, and provide habitat for native species. The project has demonstrated that the river can support seagrass growth. CHNEP would like to use the design of this study and materials created (such as the SOP manual) to launch larger and even more impactful seagrass restoration projects.

Completed Project: CHNEP Water Atlas Study Area Expansion
CHNEP staff, Contractor: University of South Florida
This project is underway and anticipated to be completed in September 2019.

Completed Project: City of Punta Gorda Climate Change Adaptation Plan
CHNEP Staff, Contractor: Jim Beever of SWFRPC
This project was completed in July 2019, with technical comments compiled and provided to the City of Punta Gorda who used them in their updating of their Climate Change Adaptation Plan.

Completed Project: **Charlotte Harbor Flatwoods Initiative Geotechnical and Surveying in Yucca Pens**
CHNEP staff, Contractor: Southwest Engineering
This project was completed in July 2019, with the production of a technical data report summarizing monitoring data and information on the hydrology and shallow hydrogeology of the Yucca Pens Unit of the Babcock Webb Wildlife Management Area (hereinafter referred to as Yucca Pens), which is managed

by the Florida Fish and Wildlife Conservation Commission (FWC). The project included test borings, lithologic interpretation, surface and groundwater monitoring wells, two fire suppression wells, and cross section surveying of Yucca Pens flow-ways and sloughs. This data will be utilized in the Charlotte Harbor Flatwoods Initiative modeling and hydrological restoration work commencing in 2020.

Completed Project: Lake Hancock Circle B Bar Reserve Shoreline Restoration Project
Contractor: Polk County
This project completed in February 2019, and restored 164 linear feet of Lake Hancock's shoreline with native vegetation after it was severely eroded during tree uprootings related to Hurricane Irma. The project reduced sedimentation into the Lake and helped to restore an important natural hydrological barrier between Lake Hancock and the Banana Creek Marsh. It also restored and reopened a well-used recreational access trail in the Circle B Bar Reserve public recreation/conservation area.

CLEAN WATER ACT CORE PROGRAM SUPPORT

CHNEP supports the Clean Water Act (CWA) core programs through direct funding of projects, staff assistance to partners and partner activities. Provided below are representative activities of CHNEP support for CWA core programs during Fiscal Year 2015.

Water Quality Monitoring

CHNEP staff continues participating in the **Coastal Charlotte Harbor Monitoring Network (CCHMN)** monthly probabilistic sampling in the estuarine and tidal waters of the Study Area. Annual field monitoring audits of the field sampling partners are conducted by CHNEP. Results of the field audits and potential corrections are discussed at an annual meeting of field and laboratory partners. The CCHMN data are entered into the state and federal STORET water quality data base. CHNEP completed a Quality Assurance Project Plan for the Lower Charlotte Harbor Monitoring Network in 2015. CHNEP is supporting Charlotte County with water quality data collection matters.

CHNEP participates in the **Regional Ambient Monitoring Program (RAMP)** which holds quarterly meetings. RAMP participants share current water quality field and laboratory issues and conduct quality assurance field sampling and laboratory analyses.

CHNEP provides ongoing support to **Charlotte Harbor Estuary Volunteer Water Quality Monitoring Network (CHEVWQMN).** CHNEP staff serves as a volunteer coordinator, assisting with annual quality control training, quality control compliance and monthly water quality monitoring. The data are uploaded into the Florida STORET database.

Controlling Non-Point Sources

CHNEP funds **Conservation grants**, many of which are aimed at educating or implementing non-point source pollution reduction. Examples include fertilizer restriction brochures and signs, native landscaping workshops, marine debris reduction, rain gardens, etc.

CHNEP undertakes **Research and Restoration Projects** that implement living shorelines, oyster restoration, seagrass restoration, and other measures aimed at uptaking and reducing pollutants in waterways.

GLOSSARY OF ACRONYMS

BMAP	Basin Management Action Plan
BMP	Best Management Practice
CAC	Citizens Advisory Committee
CAMA	Coastal and Aquatic Managed Areas
CCHMN	Coastal Charlotte Harbor Monitoring Network
CCMP	*Comprehensive Conservation and Management Plan*
CFRPC	Central Florida Regional Planning Council
CHEC	Charlotte Harbor Environmental Center
CHEVWQMN	Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network
CHNEP	Coastal and Heartland National Estuary Partnership
CWPRA	Coastal Wetlands Planning, Protection and Restoration Act
CWA	Clean Water Act
CZM	Coastal Zone Management
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FWC	Florida Fish & Wildlife Conservation Commission
FWRI	Fish and Wildlife Research Institute
GIS	Geographical Information System
GPRA	Government Performance and Results Act
HAS	Hydrological Alterations Subcommittee
HCS	Habitat Conservation Subcommittee
LID	Low Impact Development
MFL	Minimum Flows and Levels
NRCS	Natural Resources Conservation Service
NEP	National Estuary Program
NNC	Numeric Nutrient Criteria
NOAA	National Oceanic and Atmospheric Administration
NWR	National Wildlife Refuge
PR/MRWSA	Peace River/Manasota Regional Water Supply Authority
RAMP	Regional Ambient Monitoring Program
RPC	Regional Planning Council
SFWMD	South Florida Water Management District
SRPP	Strategic Regional Policy Plan
SWFWMD	Southwest Florida Water Management District
SWFRPC	Southwest Florida Regional Planning Council
SWIM	Surface Water Improvement Management
SWUCA	Southern Water Use Caution Area
TAC	Technical Advisory Committee
TMDL	Total Maximum Daily Load
USACOE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
VOHM	Volunteer Oyster Habitat Monitoring
WCIND	West Coast Inland Navigation District
WMD	Water Management District
WQ	Water Quality
WQQOS	Water Quality Quantifiable Objectives Subcommittee