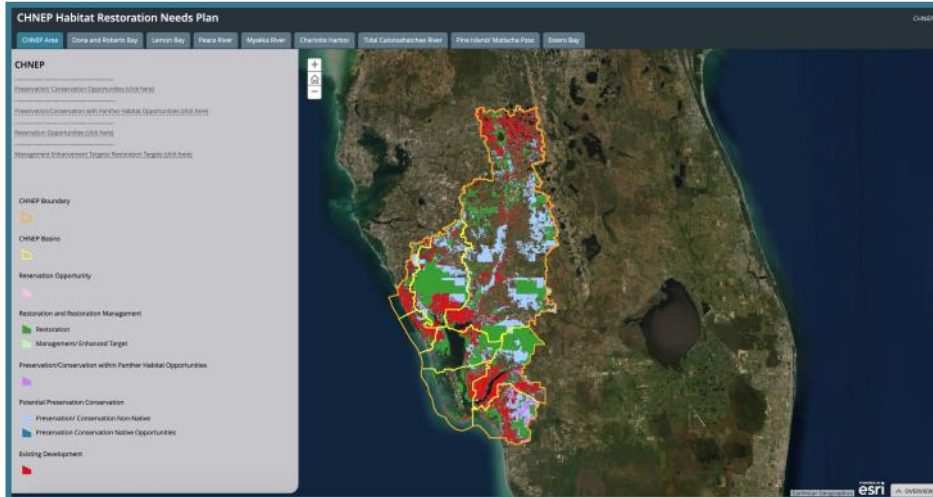
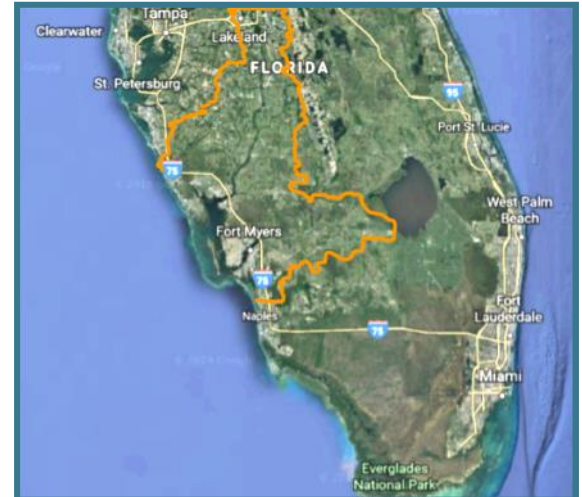


# CHNEP Water Atlas Maintenance and Enhancements



## WATER QUALITY IMPROVEMENT



### Summary

The CHNEP Water Atlas is a web-based resource center providing both technical users and interested community members and policy makers with a one-stop shop to find local data on water quality, flow, and habitat to information about educational events and volunteer resources in Central and Southwest Florida. The site includes: up to date and historical data, trend analysis, historical maps and studies, water resource maps, and much more. It is a readily accessible way to find more information about local waterways.

The page is a resource that the Coastal & Heartland National Estuary Partnership (CHNEP) continues to provide for scientists, resource managers, elected officials, and the public to view and access local data through various user-friendly maps and charts. CHNEP provides the funding necessary to maintain and annually update the CHNEP Water Atlas and ensure continued access to water quality data, analysis, and other information. Outlined below are the newest additions and improvements featured on the CHNEP Water Atlas.

### New Features and Future Additions

**Habitat Restoration Needs (HRN) Interactive Mapping Tool:** CHNEP Water Atlas users can view maps of strategic conservation opportunities and management/restoration targets from the Habitat Restoration Needs plan for the CHNEP area. These maps are presented interactively through a web-based application and divided by watershed basin for easy viewing (as depicted in the map above). Future work will include adding the freshwater Caloosahatchee basin to the interactive mapping tool and updating the map to load faster.

Visit the CHNEP Water Atlas at [www.chnep.wateratlas.usf.edu](http://www.chnep.wateratlas.usf.edu)

**Location:** CHNEP Area

**Partners:** University of South Florida Water Institute, Coastal Charlotte Harbor Monitoring Network, CHNEP Management Conference Members

**Implemented:** 2011-Present

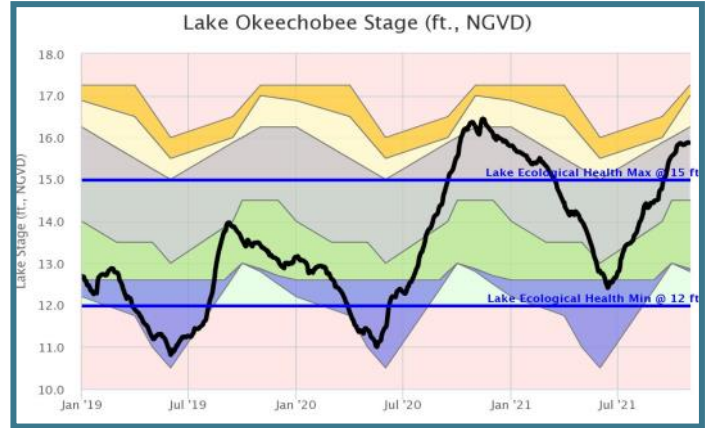
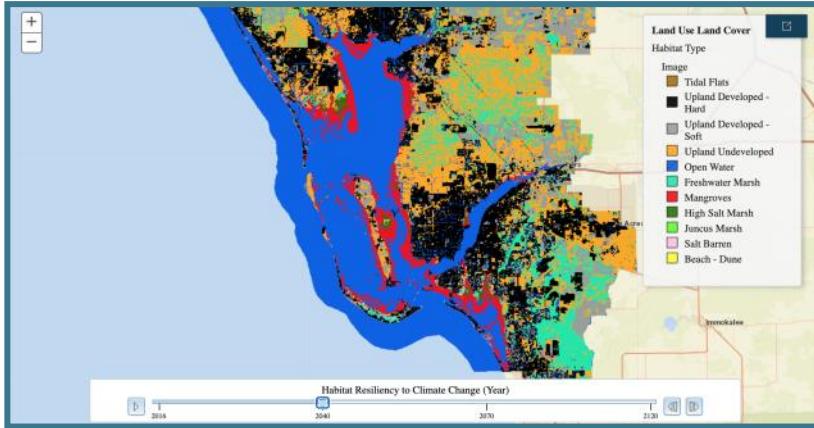
**Status:** Ongoing

**CHNEP Cost:** \$56,000 Maintenance  
\$27,670 Additions

**Funding Source:** Environmental Protection Agency

**2019 CHNEP Plan Activity:** 

Water Quality Improvement 1.2: Support uploading and archiving of data in standard, common public databases, including FDEP's database and the CHNEP Water Atlas.



**Habitat Resiliency to Climate Change (HRCC) Interactive Story Map:** A climate change interactive map story has been added for users to take a closer look at what kind of impacts our waterways may experience given the most recent climate change and sea level rise science (left image). These maps show habitat loss and conversion to open water over time, as well as estimating the migration of various habitat to higher elevations as well as inland.

**Lake Okeechobee Conditions:** A recent addition of the Lake Okeechobee pages focuses on current lake levels and water quality conditions and trends and documents changes in flow from Lake Okeechobee into the Caloosahatchee River. This page includes background information on how the Lake and River are managed, reports, plans, and spatial datasets (right image). This new page will allow residents and water managers to easily access the status and conditions of this lake and its impacts to the Caloosahatchee watershed which partially falls into CHNEP's expansion area.

**Seagrass Maps:** The CHNEP Water Atlas now features seagrass pages that include current and historical aerial maps and seagrass acreages as well as data collected in the field and analysis to help users understand the importance of seagrass monitoring as an indicator of water quality and recovery. Seagrass pages are broken down by watershed basin for easy viewing and also include an interactive mapper.

**Numeric Nutrient Criteria (NNC) Calculator:** The FDEP Numeric Nutrient Standards specify region-specific and sometimes site-specific criteria also called Numeric Nutrient Criteria (NNC) to determine if a waterbody passes the standard. The site will soon feature the Numeric Nutrient Criteria (NNC) Calculator, which compares preliminary data on chlorophyll a (used to measure phytoplankton levels) as well as phosphorous and nitrogen levels in CHNEP waterbodies, using data from water quality samples stored in the Water Atlas database, to thresholds defined in the Florida Administrative Code (FAC). The NNC Calculator tool can be used to informally evaluate recent nutrient levels in selected waterbodies by comparing them to applicable state standards.

**Water Quality Dashboard:** A map-based dashboard will present the most recent water quality data for waterways in the CHNEP area on red-yellow-green dials. The dashboard tool will compare the most recent data against existing water quality standards to demonstrate if the results from the sample are good, fair, or poor. The dashboard will include nutrient levels along with water clarity and bacteria data.

Visit the CHNEP Water Atlas at [www.chnep.wateratlas.usf.edu](http://www.chnep.wateratlas.usf.edu)

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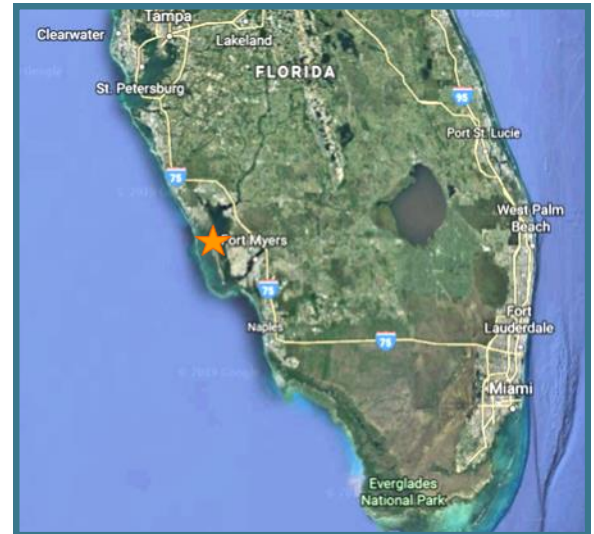


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# Coastal Charlotte Harbor Monitoring Network (CCHMN)

## WATER QUALITY IMPROVEMENT



### Summary

The Coastal Charlotte Harbor Monitoring Network (CCHMN) is a regional partnership of agencies (managed under CHNEP) that collect monthly water quality data using consistent, technically-sound sampling design. The long-term random sampling of strategically located stations allows for the scientific assessment of water quality status and trends. The CCHMN was created to fill gaps in coastal water monitoring and initiate a unified sampling approach throughout the CHNEP area.

The Southwest Florida Water Management District (SWFWMD), CCHMN partners, and CHNEP have been conducting long-term water quality and quantity monitoring in the Upper and Lower Charlotte Harbor since 1993, leading to the initiation of the CCHMN in 2001. Through this program 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, Tidal Myakka, Peace, and Caloosahatchee Rivers. Fifteen water quality parameters are measured and analyzed using consistent field and laboratory methods.

CHNEP contributes to this project by assisting in the monitoring of upper and lower Charlotte Harbor within the project area. CHNEP creates Standard Operating Procedures for the CCHMN, conducts annual field audits and meetings, contracts and assists with field sampling, and compiles and analyzes collected water quality data through the CHNEP Water Atlas.

**Location:** Charlotte and Lee Counties, FL

**Partners:** Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, Southwest Florida Water Management District, Charlotte County, Lee County, and Cape Coral Environmental Resources Division.

**Implemented:** 2001-Present

**Status:** Ongoing

**CHNEP Cost:** \$90,240

**Funding Source:** Environmental Protection Agency and Southwest Florida Water Management District funds managed by CHNEP

**2019 CHNEP Plan Activity:**  1.1

Water Quality Improvement 1.1: Assist with the consistent and efficient collection of technically-sound long-term water quality data.

## Anticipated Results and Benefits

### Outreach Opportunity:

This project uses a random sampling technique to gather snapshots of water quality data in the project region. At each sampling location, field measurements and water samples are collected from the water column and are transported to certified labs for analyses. The results from this project are accessible to the general public through the CHNEP Water Atlas, allowing residents and visitors to view updated water quality status reports of nearby watersheds and view overall water quality trends.

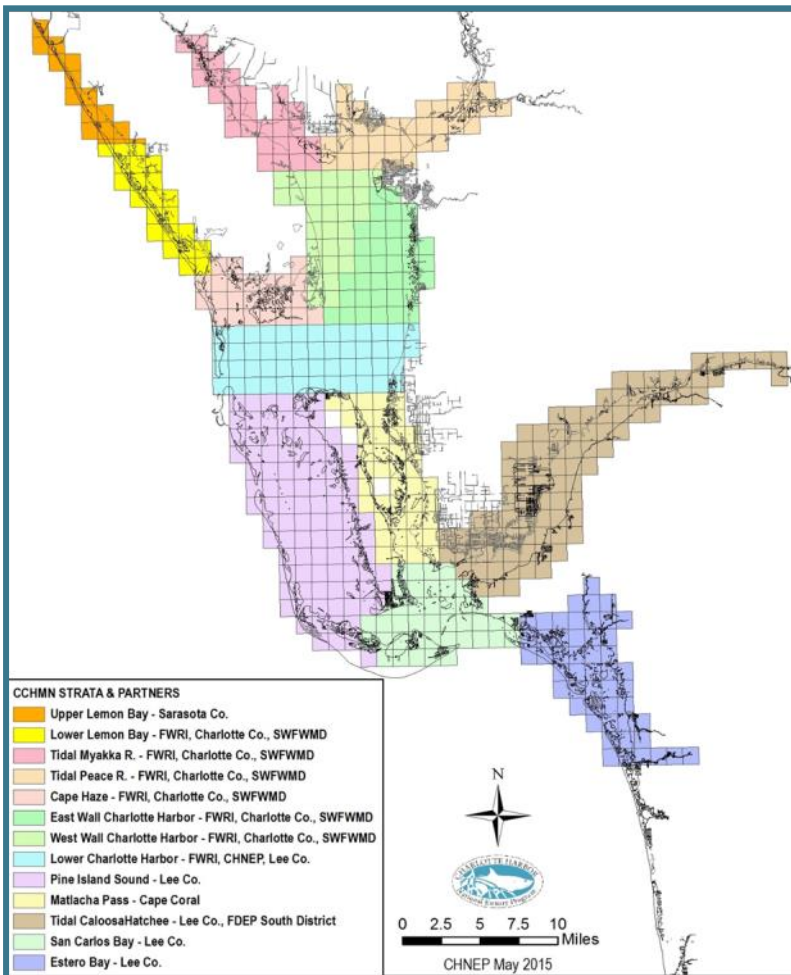
### Informed Decision Making:

The CCHMN data is entered into the state Watershed Information Network (WIN) database and is used to evaluate status and trends of state, regional, and local estuarine conditions. The data is used locally by CHNEP to develop future water quality targets and numeric nutrient data. Charlotte Harbor is also a Southwest Florida Water Management District (SWFWMD) Surface Water Improvement and Management (SWIM) priority Water Body.

### Improved Water Quality:

The continuation of consistent data collection throughout this project area will help to assess impairments, determine total maximum daily load limits (TMDL), and develop basin management action plans for the watershed. The gathering of water quality data results in valuable information that is used for guidance on the improvement of water quality based on records starting in 2000.

Visit the CHNEP Water Atlas at [www.chnep.wateratlas.usf.edu](http://www.chnep.wateratlas.usf.edu)



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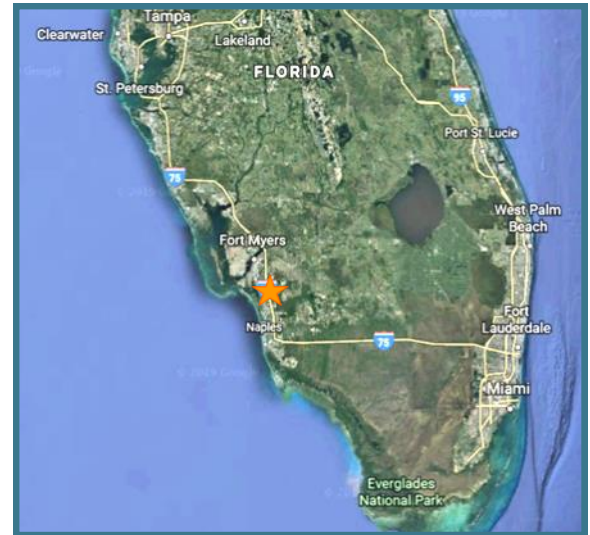
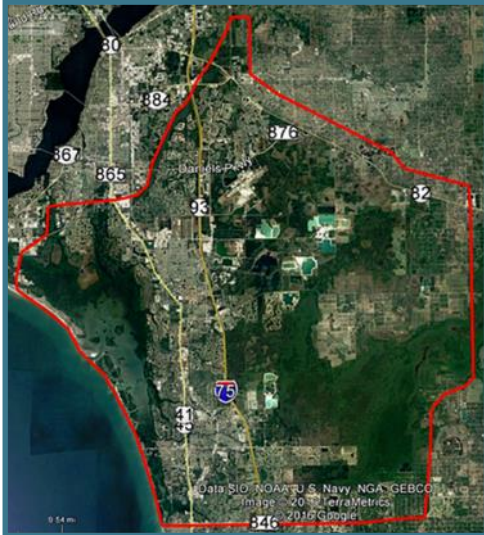


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# South Lee County Watershed Initiative Hydrological Modeling Project

## HYDROLOGICAL RESTORATION



### Summary

The South Lee County Watershed is comprised of the Estero River, Spring Creek, and Imperial River watersheds, which flow into the Estero Bay Aquatic Preserve. Much of the native wetland habitats have been lost to agriculture, development, the installation of drainage canals, surface mining, and major roadways. These activities have significantly altered the historic flow of water from the southern region of Lehigh Acres south to the Corkscrew Sanctuary and southwest to Estero Bay. The surrounding wetland ecosystems are highly susceptible to over-drainage, flooding, habitat changes, water quality degradation, and climate change stressors. The rivers and creeks in this area experience significant flooding during storm events and very low flows during the dry season.

To address these concerns partners in the area came together to form the South Lee County Watershed Initiative (SLCWI), which aims to restore more natural water flows, improve water quality and environmental conditions, and increase natural water storage and moderation of flooding events.

CHNEP is providing funding for the development of a science-based, data-driven integrated surface/ground water hydrologic model that is capable of simulating both dry and wet season water levels and flows. It will fill data gaps and bridge the various modeling efforts in the area to build a regional watershed-scaled picture. Potential future conditions scenarios (that include factors like climate change as well as likely development and public works projects) will be modeled to serve as a planning tool for resource management agencies, and will help guide appropriate restoration and management in the region.

**Location:** Lee County, FL


**Partners:** South Florida Water Management District, Southwest Florida Regional Planning Council, City of Bonita Springs, Lee County, Village of Estero, Bonita Springs Utilities, Florida Department of Transportation, Conservancy of Southwest Florida, Audubon Society, Corkscrew Swamp Sanctuary, and the Estero Council of Community Leaders.

**Implemented:** 2020

**Status:** Ongoing-December 2022

**CHNEP Cost:** \$206,799

**Funding Source:** Environmental Protection Agency, South Florida Water Management District

**2019 CHNEP Plan Activity:**  Hydrological Restoration 1.1: Conduct data collection, modeling, and analysis of historical, current, and projected hydrologic conditions to identify needs and guide hydrologic restoration.





Mike Kaplan

## Anticipated Results and Benefits

### Informed Decision Making:

This project will result in a coherent model that simulates both wet and dry season water levels and flows for the Estero and Imperial River watersheds. This will aid in identifying appropriate and cost-effective restoration projects for the area.

### Improved Water Quality:

Restoration efforts conducted as a result of this project will improve the water quality of the individual rivers themselves, as well as the main waterways they flow into. Restoring natural flows will re-hydrate wetlands and allow them to provide their natural water-cleansing function to improve water quality downstream.



Linda Wroble



The Weather Channel

### Increased Aquatic and Terrestrial Habitat:

Re-hydrating wetlands will clean water before it moves downstream. This provides better habitat for fish and wildlife in the downstream areas and estuary. It will also increase natural water storage on land and allow aquifer recharge. Water flow will be rerouted from areas where it is doing harm to provide greater flood protection.

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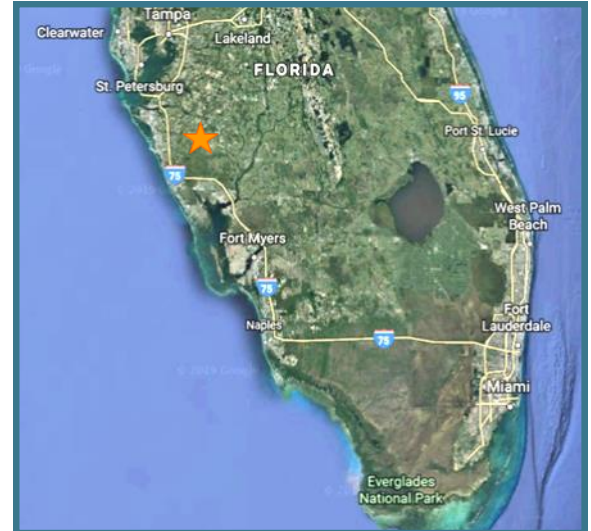
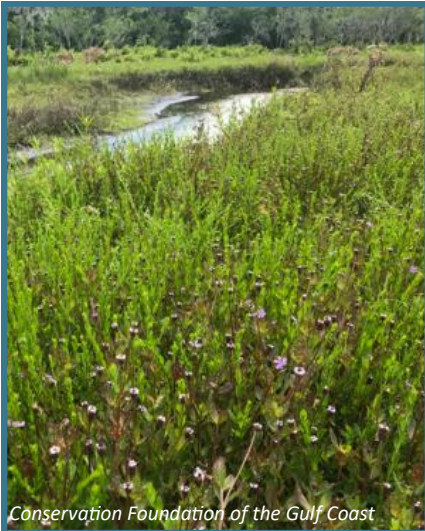


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# Myakka Headwaters Preserve Habitat Restoration

## FISH, WILDLIFE, & HABITAT RESTORATION



### Summary

The Myakka River flows from headwaters in Manatee and Hardee counties along a narrow floodplain forest corridor, then enters a series of lakes in Myakka River State Park. Deer Prairie Creek and Big Slough feed the river as it widens and enters Charlotte Harbor. A wide variety of habitats including wetlands, prairies, hammocks, and pinelands are found along its shores.

Many entities including Conservation Foundation of the Gulf Coast (CFGC), USDA Natural Resources Conservation Service (NRCS), and the Southwest Florida Water Management District (SWFWMD) are working to acquire and restore habitats within the Myakka River basin, especially in Manatee County where there is not as much protection for the River or watershed. CFGC recently acquired 363 acres within Flatford Swamp, the river's largest forested wetland, located at the headwaters of the Myakka River. This new preserve, Myakka Headwaters Preserve, is home to a diverse array of species including orchids, airplants, and lowland loose strife. This area is also heavily-infested with invasive species that prevent native species from thriving.

The CHNEP is working with SWFWMD and CFGC to fund and manage a project to remove exotic species and install native plants in selected critical areas on the property.


**Location:** Manatee County, FL

**Partners:** Conservation Foundation of the Gulf Coast and the Southwest Florida Water Management District

**Status:** Upcoming 2022-2023

**CHNEP Cost:** \$56,000

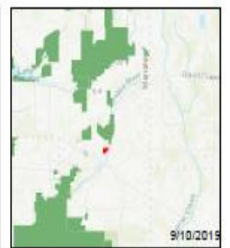
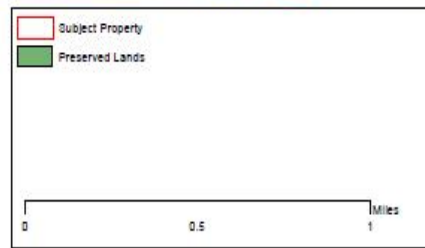
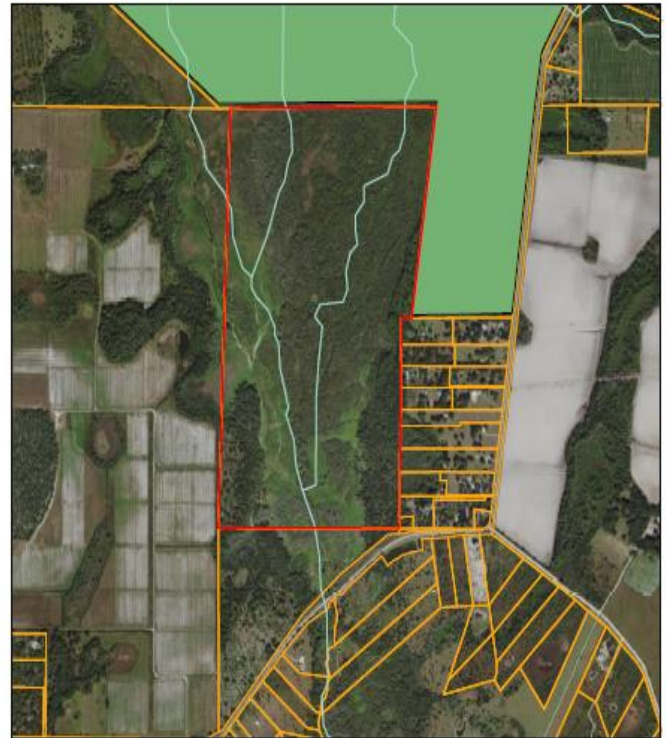
**Funding Source:** Southwest Florida Water Management District funds managed by CHNEP

**2019 CHNEP Plan Activity:**  Fish, Wildlife, and Habitat Protection 2.2: Encourage management of public lands and public conservation easements to protect, restore, and create native plant and animal communities.

2.1 Encourage and support the permanent conservation of environmentally sensitive lands and critical habitat areas.



Myakka Headwaters Preserve



## Anticipated Results and Benefits

### Enhanced Habitat:

The removal of exotic invasive vegetation and the planting of native wetland vegetation will work to restore the natural balance of this area. Invasive species can physically impede the growth of native vegetation and exclude wildlife or prevent growth of plants that may be a food source. Not only will this improve wildlife habitat for gopher tortoises and rare plants within the project area, it will also remove a source of exotic species contamination for the Myakka River.

### Protection of Natural Flow Regimes:

The enhancement and protection of this crucial floodplain forest protects part of the natural flow regime of the Myakka River. Aquatic habitat, flood protection, and water quality are all improved by ensuring the headwaters of the Myakka River are protected.

### Continued Restoration:

Restoration and management techniques and results of the project will be documented. Discussion may include recommendations for land management, both onsite and at other area restoration sites, based on project results.

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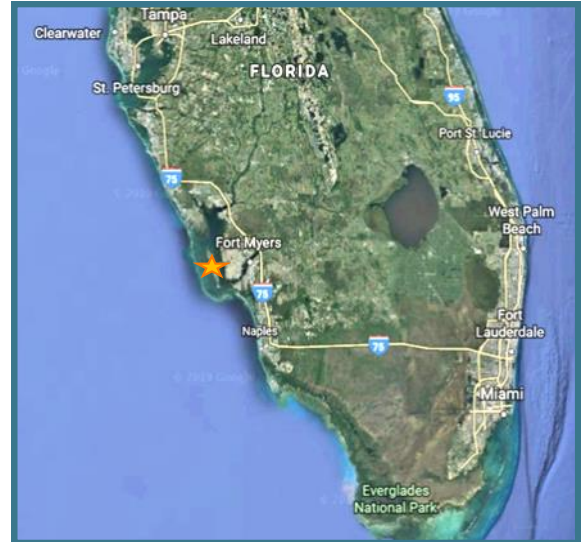


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# Pine Island Flatwoods Preserve Wetland Habitat Enhancement

## FISH, WILDLIFE, & HABITAT RESTORATION



### Summary

Pine Island Flatwoods Preserve (part of the Lee County Conservation 20/20 Program) is a 919-acre passive area which supports 134 wildlife species. This project is identified in the Pine Island Flatwoods Preserve Land Stewardship Plan, to control exotic plant species, provide freshwater to wildlife outside of the wet season, and restore hydrology of the site.

The proposed 1.27 acre project area presently includes four abandoned shrimp farm ponds surrounded by multiple earthen spoil berms. The planned construction activities include the removal of these berms, construction of 100 feet of new berm to ensure wetland water retention, and re-contouring of the current shrimp pond area to create two distinctive water management areas for habitat enhancement purposes.

Following construction, the enhanced freshwater marsh will be approximately 2 to 2.5 feet deeper and will connect to the Pine Island Sound estuary through an estuarine pond and outfall.

Restoration of these old shrimp ponds will provide wetland habitat and a freshwater source to wildlife year-round. The project will also improve water quality and flows downstream.

**Location:** Lee County, FL

**Partners:** Florida Fish and Wildlife Conservation Commission, Lee County Parks and Recreation Conservation 20/20

**Status:** Projected to begin in 2022

**CHNEP Cost:** \$96,000

**Funding Source:** Environmental Protection Agency

**2019 CHNEP Plan Activity:**



Fish, Wildlife, & Habitat Restoration 2.2: Encourage management of public lands and private lands with public conservation easements to protect, restore, and create native plant and animal communities.



## Anticipated Results and Benefits

### Enhanced Quality of Wildlife Habitat:

Documented listed species on-site include Little Blue Heron, Tricolored Heron, Reddish Egret, Roseate Spoonbill, and threatened Wood Stork. This project will result in the enhancement of wildlife habitat by restoring an abandoned developed area (former shrimp ponds) to a more natural coastal freshwater and estuarine wetland habitat. Exotic invasive species will also be removed from the site, improving habitat quality. The project will also extend the hydroperiod of wetlands, thereby increasing breeding habitat for amphibians, feeding habitat for wading birds, and providing a freshwater source for other animals.

### Restored Hydrology:

Restoring more natural flows will increase fresh surface and ground water availability to support healthy natural systems. The hydrology of the site will be restored by reconstructing the former shrimp ponds from a series of spoil berms and exotic plant-infested ditches. Freshwater will flow from the restored freshwater wetland to a brackish-water pond and eventually out into the mangrove-lined estuary.

### Increased Wetlands:

This project will increase the area of restored wetland habitat. Wetlands naturally filter out pollutants and provide freshwater base flow to maintain healthy salinity levels in tidal creeks and estuaries. As a result of increasing wetlands on-site, cleaner and more appropriate flows of freshwater will be flowing across and off-site — supporting healthier and more abundant aquatic life downstream.

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