

# Hydrological Restoration Plan



Photo: Florida State Parks

## Atlantic Ridge Preserve State Park

Ecological Restoration (FES 445)  
Oregon State University  
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## 1.0 SITE IDENTIFICATION

### 1.1 INTRODUCTION

The entire Everglades watershed has been dramatically changed. The water flows that once flowed freely from the Kissimmee River to Lake Okeechobee to Biscayne Bay have now been altered by canals, land use, and development. Flood control was the start of the ecosystem degradation. Next came the addition of agricultural, both cattle and crops, to the areas above and below Lake Okeechobee. Development continued and many wetlands and forests are now gone. To bring back the necessary waterflow, many areas around Lake Okeechobee need to be restored hydrologically.

### 1.2 IDENTIFICATION

Site: Atlantic Ridge Preserve State Park

Agency: State of Florida Department of Environmental Protection

County: Martin County

Total Park Acreage: 4,886.08

Areas for Restoration: 87.53 acres of Canals & Ditches (total 21 miles)

### 1.3 HISTORY

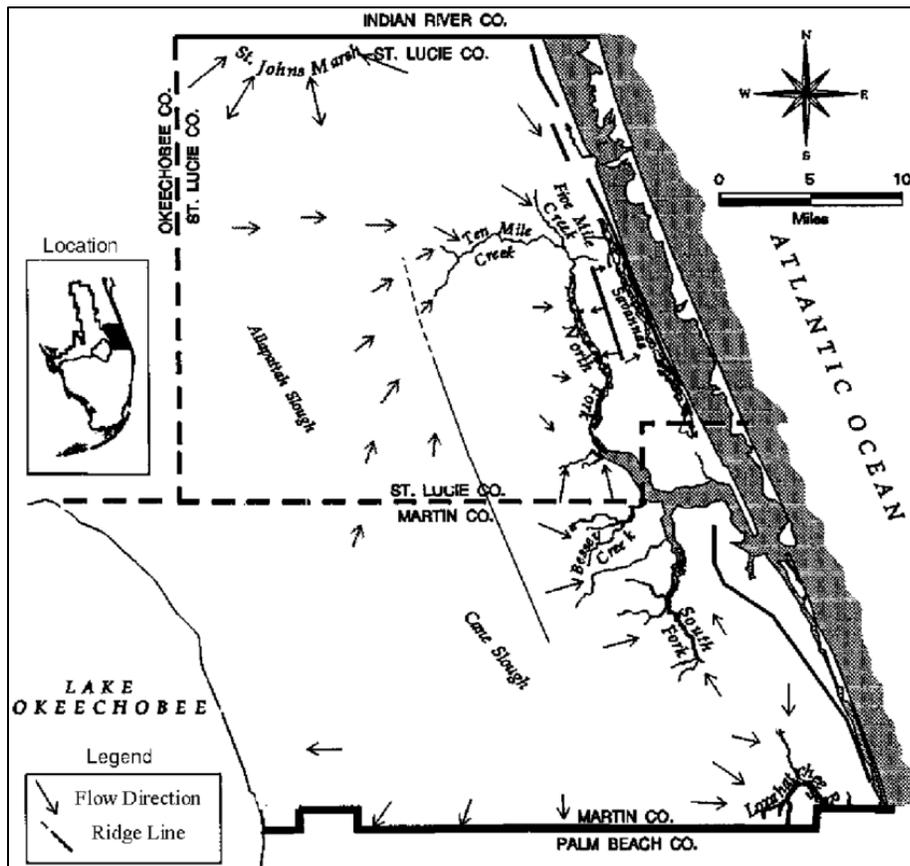


Fig. 1 The Historic St. Lucie River Credit: SFWMD

Much of the eastern portion of Florida east to Lake Okeechobee were connected wetlands. Back in 1892, the St. Lucie River was 35 miles long with a North and South Fork. Construction of an inlet changing the river into an estuary made the river important for the Southern Indian River Lagoon. The South Fork of the St. Lucie River flowed into the Loxahatchee River through Kitching Creek.

The St. Lucie Canal (C-44) was built from 1916-1928. This canal connected the South Fork of the St. Lucie River to Lake Okeechobee and provided flood control. The basin included drained and filled land that has now been developed into the cities of Jensen Beach, Palm City, Port Salerno, and Stuart. The Atlantic Ridge Preserve State Park was part of this water flow off the South Fork. The southernmost portion of the preserve flows into the Kitching Creek.

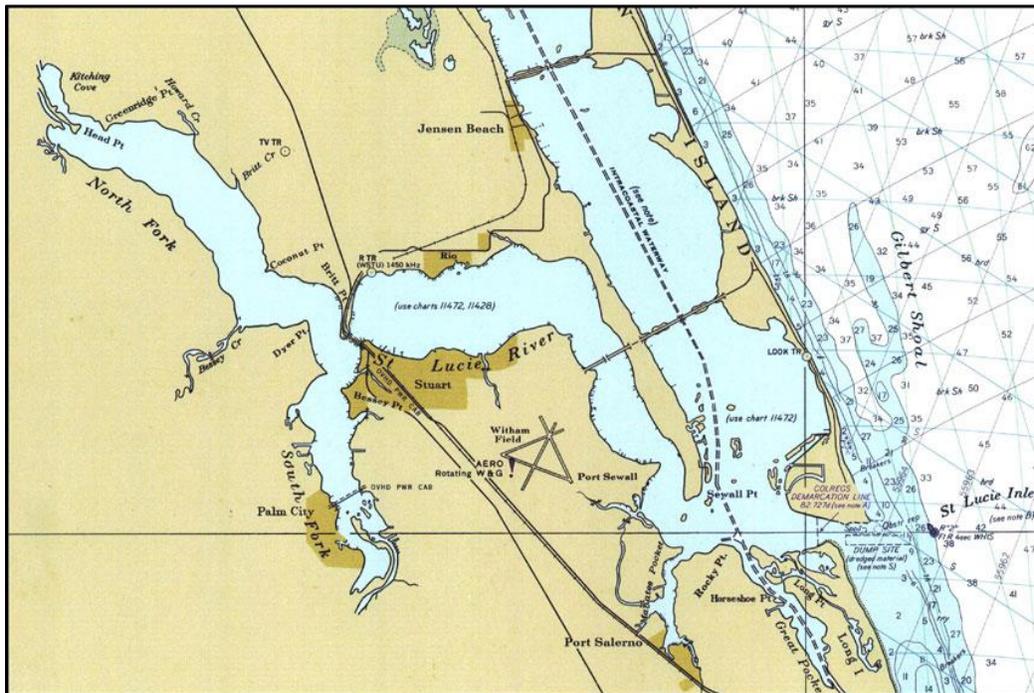


Fig. 2 The Historic St. Lucie River Credit: USF/Maps Etc

The eastern portion of the Atlantic Ridge Preserve State Park (“ the preserve”) used to be both a hunting preserve and a cattle ranch. Canals and ditches were built decades ago to divert water from the uplands (to better cattle grazing), and to help drain the wetlands during the rainy season. Historically, the preserve contained a tributary of the South Fork of the St. Lucie River which flows southward. The building of Becker Farms on the southern border blocked much of this tributary waterflow. The changes to the land also impacted the overall hydrology for the entire area including surface water supply for both the Floridan Aquifer system and the Surficial Aquifer System.

The State of Florida acquired the land in 1998 whereby a portion of the preserve with the St. Lucie River South Fork was managed by the SFWMD. The State of Florida in turn leased the preserve land to the State of Florida Department of Environmental Protection (“FDEP”) for a period of 50 years, ending on February 13, 2052.

The project will restore historical water flow and natural hydrology to the preserve. Due to land fragmentation from agriculture and development, the watershed in this area was split up, leveed, or drained with some damaged beyond repair. Another important reason to restore this reserve is that it is part of the Florida Forever Conservation Acquisition Program<sup>1</sup>. This preserve will provide many ecosystem services once restoration is completed. The preserve will not only provide water purification and storage, nutrient cycling, and carbon storage, but it will provide wet habitats for many plants and animals.

## 1.4 LOCATION

The entrance of the site is located at the geographical coordinators of 27.105991 N, -80.244923 W in the city of Stuart, Martin County, Florida, north of Jonathan Dickinson State Park. The site is southwest of the St. Lucie Inlet and east of Lake Okeechobee. The tract is bound by I-95 on the northwestern corner, SE Cove Road to the north, Bridge Road to the south, and Route 1 to the east.

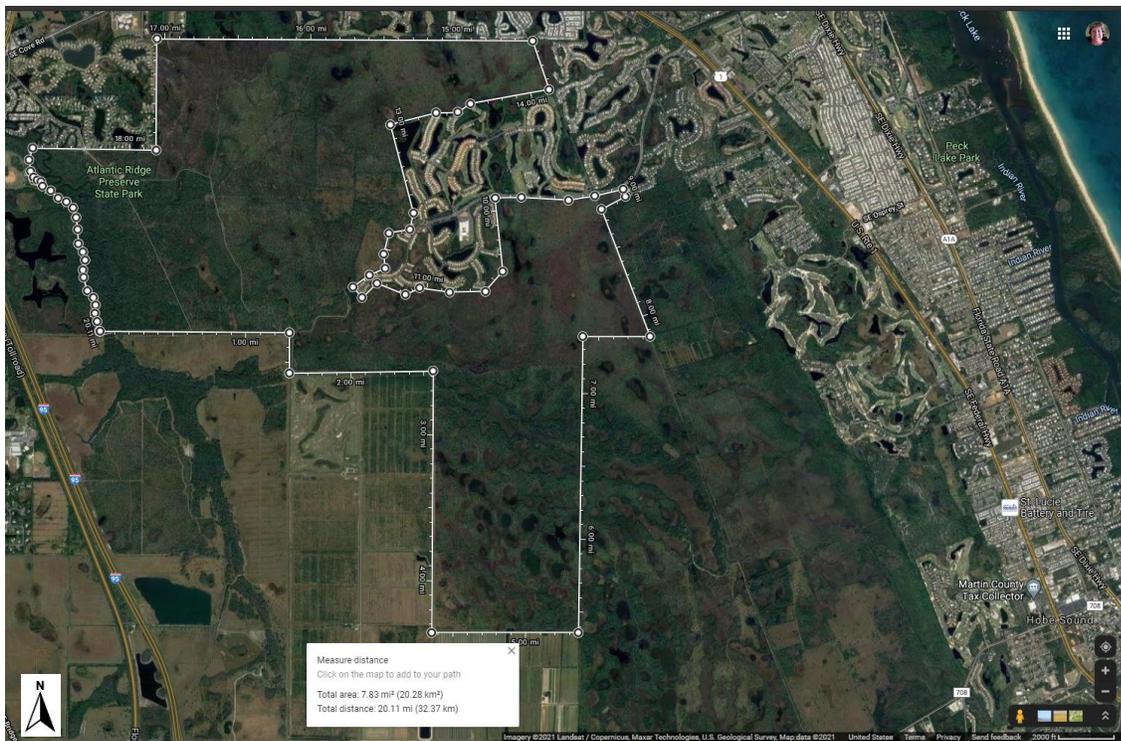


Fig 3. Site Map of Atlantic Ridge Preserve State Park

Source: Google Maps

Total area of Preserve:  
7.83 mi<sup>2</sup> (20.28 km<sup>2</sup>)

Total outline of main site:  
20.11 miles

<sup>1</sup> This acquisition program allows the state of Florida to acquire lands to protect and conserve water resources, and to restore and manage public lands. This land acquisition allows for more public access to recreation in areas that were not available previously.

## 1.5 CLIMATE

The preserve is in EPA Ecoregion 15 - Tropical Wet Forest so it receives more precipitation than the U.S. average of 31.8 inches. Currently, Martin County receives an average of 60.2 inches of precipitation averaging over 128 days per year. Martin County also receives 234 days of sunshine annually.

## 1.6 TOPOGRAPHY

Being part of the Eastern Flatwoods, the preserve has a low, flat topography. The highest point in the park is at 20.884 feet. The lowest point in the park is -0.277 feet. Any changes in elevation are from past sediment deposits from ancient oceans.

## 1.7 SOILS

There are 28 different soil types found in the preserve. They are either poorly drained sand or muck based upon each of the different natural communities found in the preserve. This project will be working in different communities of the preserve so it will involve both types of soils.

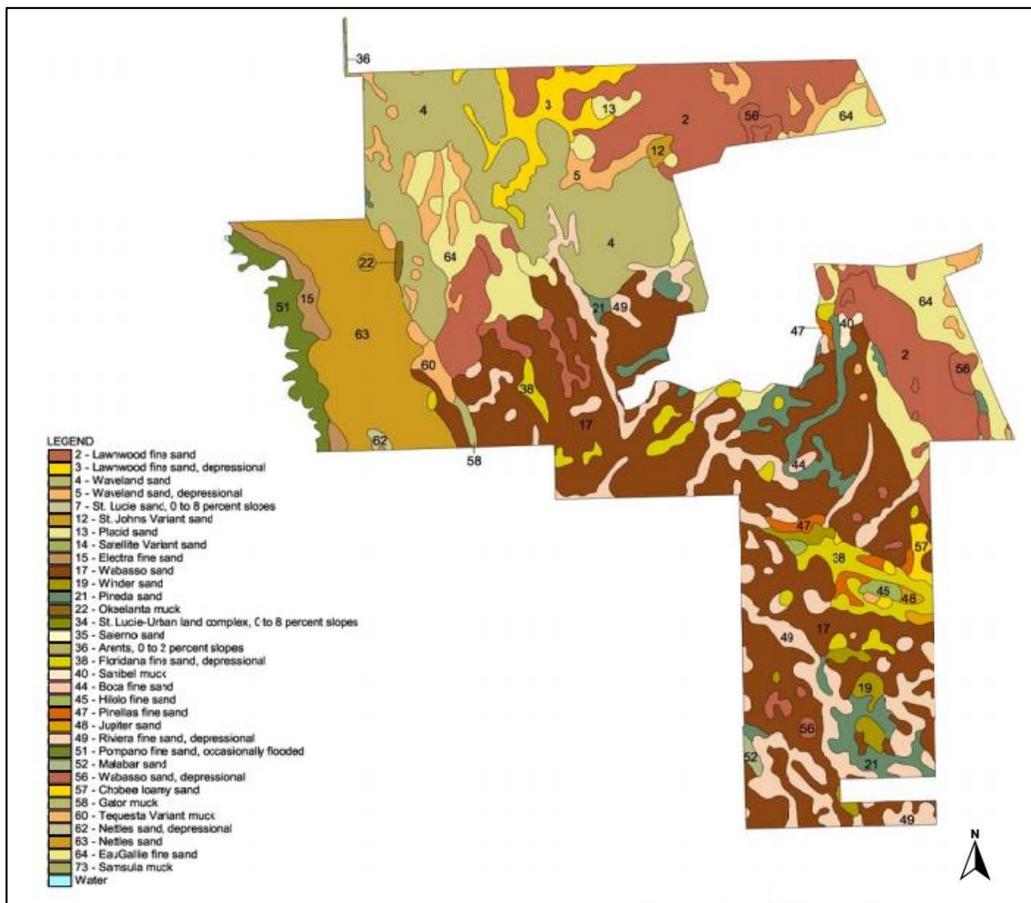


Fig. 4 Soil Map of Atlantic Ridge Preserve State Park

Source: FDEP, Atlantic Ridge Preserve State Park Unit Management Plan, 2005

## 1.8 VEGETATION

The preserve contains different types of communities, from scrub to upland hardwood forest to wet hammocks to wet flatwoods. Trees in the dryer uplands include cabbage palm, live oak, scrub oaks, and slash pine trees. Bushes and plants include beautyberry, Dahoon holly, native grasses, native milkweed, saw palmetto, Spanish needles, staggerbush, Virginia creeper, and wild coffee in the dryer areas. In the wetter areas you can find buttonbush, cypress trees, Gallberry, red maples, and wax myrtle. In inundated water, you can find bladderwort, cattails, duckweed, pickerel weed, sedges, sawgrass, and more.

## 1.9 COMMUNITIES

The preserve contains upland communities including the scrub, hardwood hammocks, and mesic flatwoods. The preserve also contains wetland communities including basin swamps, depression marshes, dome swamp, slough, wet flatwoods, and a wet prairie. The wet flatwoods and wet prairies are the two top dominant communities in the preserve.

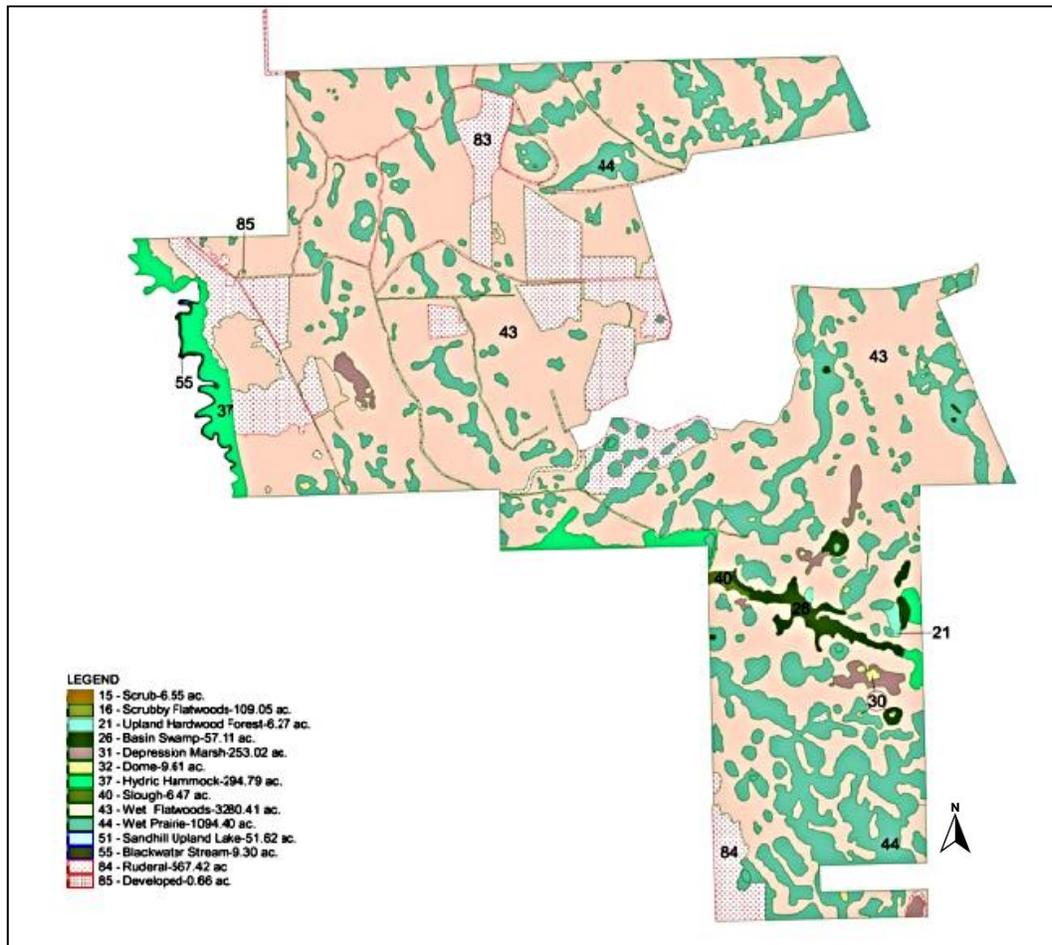


Fig. 5 Communities Map of Atlantic Ridge Preserve State Park  
Source: FDEP, Atlantic Ridge Preserve State Park Unit Management Plan, 2005

## 1.10 RIVERS / STREAMS

The preserve contains 2.6 miles of the South Fork of the St. Lucie River that runs along the northwestern border, and blackwater streams that exit out of the southern border.

## 1.11 WILDLIFE

A herpetological survey was conducted on the preserve in 2001-2003. It was found that the preserve was home for toads, frogs, treefrogs, alligators, lizards, snakes, and turtles with a few non-natives in the mix (like green iguanas). Insects found in uplands and wetland include dragonflies, butterflies, moths, skippers, caterpillars, spiders, ants, and more.

You can also find birds in the uplands, like the Florida scrub-jays, hawks, owls, warblers, wrens, and many more. Wading birds found in the preserve include, but are not limited to, mottled ducks, anhinga, cormorants, wood storks, little blue heron, tricolored heron, Florida sandhill crane, white ibis, vultures, and many more.

Mammals you can find in the preserve include otters, opossum, rabbits, rats, raccoons, squirrels, coyotes, armadillo, deer, bats, and more.

## 1.12 PROTECTED SPECIES FOUND IN THE PRESERVE

### Animals

Florida Sandhill Crane	Threatened species
Florida Scrub Jay	Threatened species
Gopher Tortoise	Threatened species
Little Blue Heron	Threatened species
Tricolored Heron	Threatened species
Wood Stork	Endangered species

### Plants

Catesby's pine lily	Threatened species
Giant air plant	Endangered species
Banded wild pine	Threatened species
Cardinal air plant	Endangered species
Rose pogonia	Threatened Species

## 1.13 WATERSHED & AQUIFER

Region 03 South Atlantic-Gulf  
03090202  
Everglades Watershed



Fig. 6 Florida Watershed Map  
Source: USGS

The preserve is within the South Fork of the St. Lucie watershed. In the southern end of the preserve, the water drains into the Kitching Creek, a tributary that flows into the Northwest Fork of the Loxahatchee River. Martin County is over the Surficial Aquifer System and the Floridan Aquifer Systems.

### 1.14 U.S. EPA ECOREGION

- Level I: 15.0 Tropical Wet Forests
- Level III: 75 Southern Coastal Plain
- Level IV: 75d Eastern Florida Flatwoods

The preserve is in the EPA’s Eastern Florida Flatwoods. Pine Flatwoods have a low, flat topography and poorly drained sandy, acidic soil. These flatwoods are used for timber, wildlife viewing and other recreational activities. Some of it may be used for cattle grazing in those areas that are more grassland and less forest.

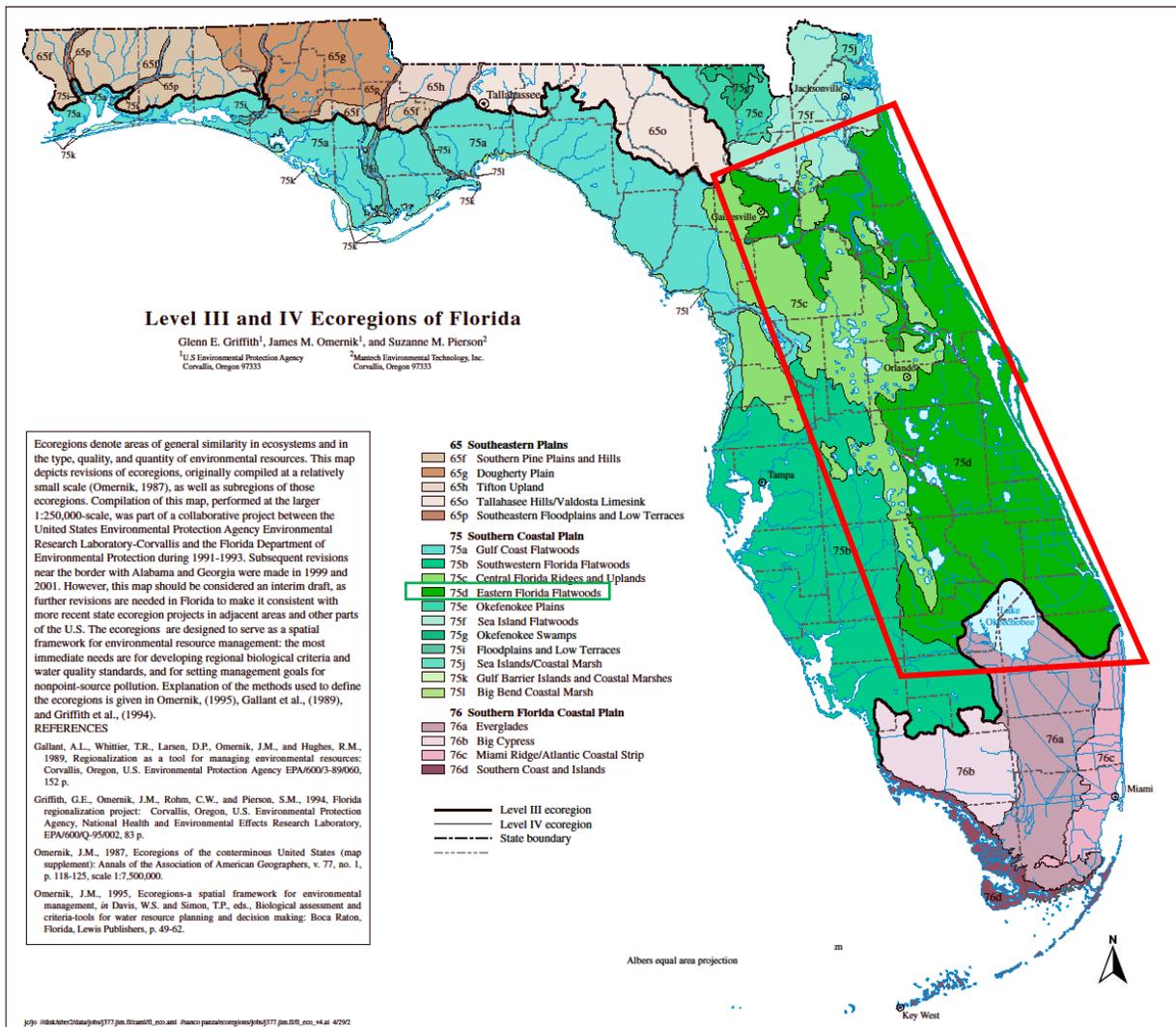


Fig. 7 U.S. EPA Ecoregion Map

Source: EPA Ecoregions

## 1.15 SITE PHOTOS

Please note that many of these areas have succeeded to upland communities and will return once again to wetland communities upon completion of this project



Fig. 8 Area inundated with water near an upland pine and sabal palm community  
Source: Florida State Parks



Fig. 9 Upland community with deciduous trees and saw palmettos with a tannin stream  
Photo: Florida State Parks



Fig. 10 Standing water amongst pine trees and saw palmettos  
Photo: Wild South Florida

## 1.16 GOOGLE SATELLITE IMAGES

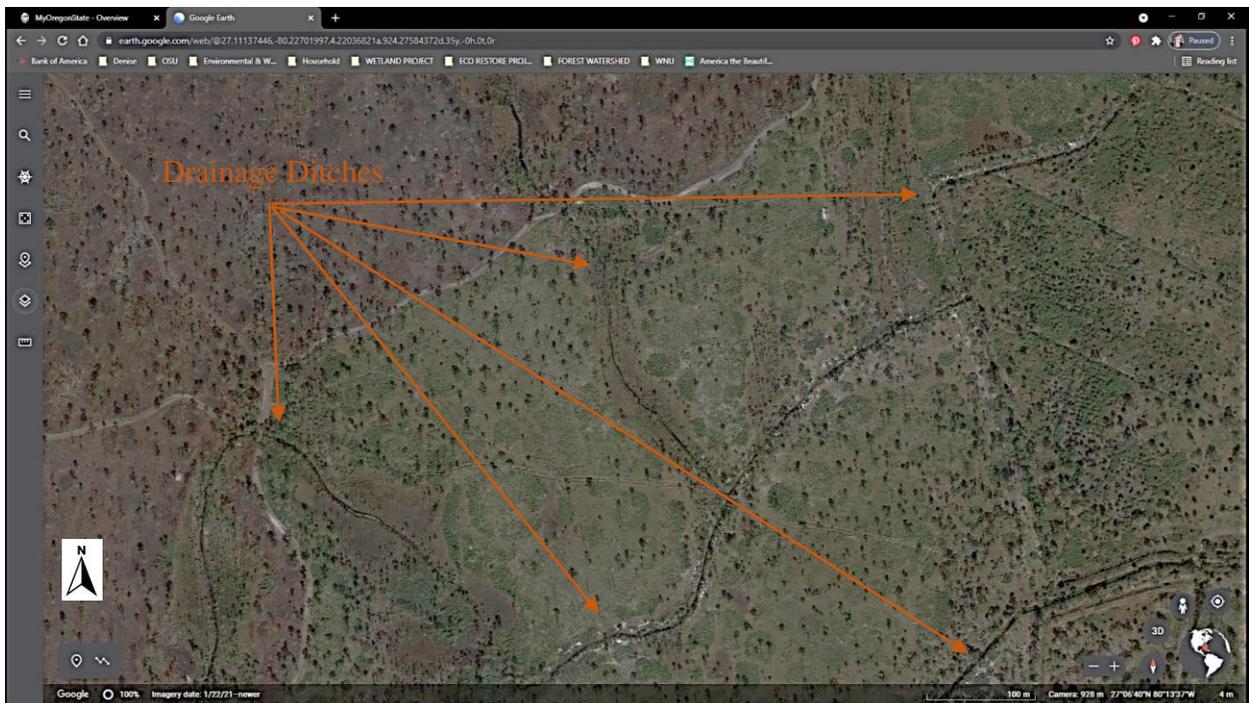


Fig 11. Satellite Image of Atlantic Ridge Preserve State Park

Source: Google Earth

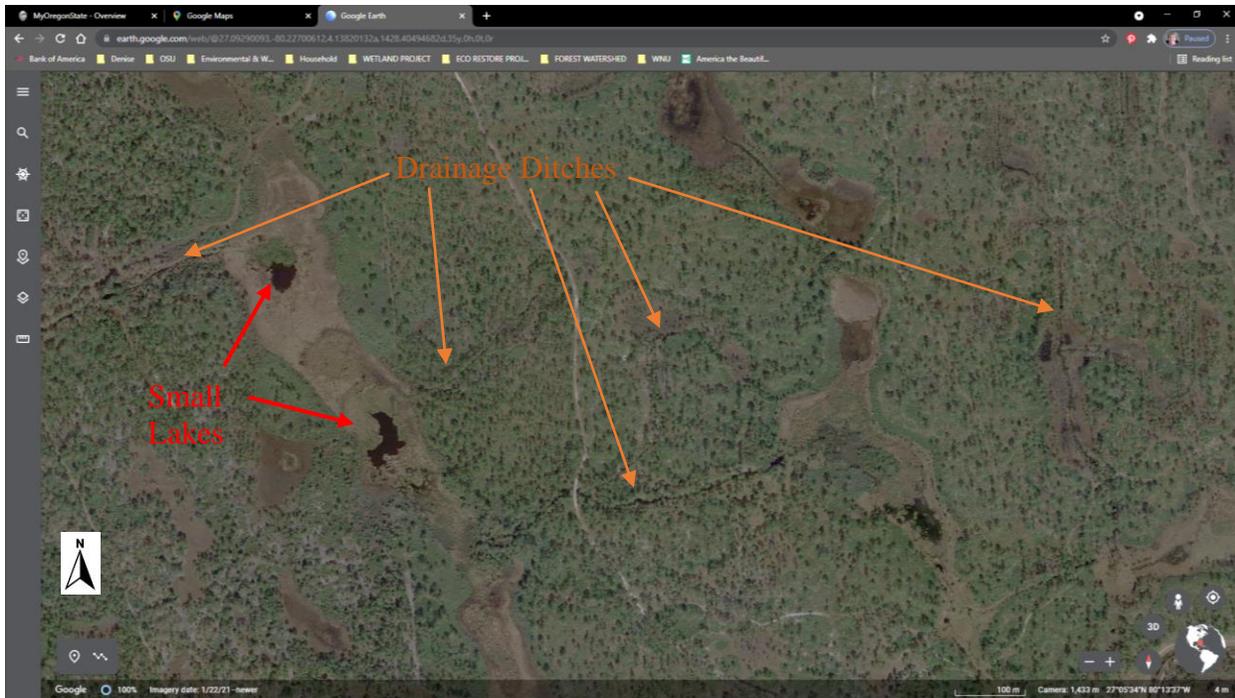


Fig 12. Satellite Image of Atlantic Ridge Preserve State Park

Source: Google Earth

## 1.17 STAKEHOLDERS

There are many stakeholders involved in this restoration project. As such, meetings between all stakeholders would be held before, during, and after the project. The FDEP oversees all State Parks and would head up the meeting and the project. The SFWMD owns a portion of the land and oversees its water resources. The Florida Fish and Wildlife Conservation Committee helps with wildlife management programs. Jonathan Dickinson State Park currently provides operation and maintenance of the preserve. Both Martin County and the City of Stuart are stakeholders as the preserve provides ecosystem services and recreational activities to those living in the county and the city. As I-95 runs near the northwest corner of the preserve, the Florida DOT should be included in meetings. Employees of Kitching Creek Park should be involved as the water coming from the preserve will end up going through the Kitching Creek. Additional stakeholders are the developments and farms located near the southern portion of the preserve, which may possibly be impacted by the change in hydrology. These include, but are not limited to, Bridge Road Farm, The Grove XXIII, Lost Lakes Golf Club, and Champions Club at Summerfield.

## 1.18 CURRENT CONDITIONS

The plant communities have gone through succession due to changes in hydrology because of the ditches and canals added in the past. Throughout the preserve, the plants have changed to obligate upland plants which are not suited for water inundation or water flows. Due to less water, the soil has become dried out and loose, allowing wind erosion to further degrade the soil. The water levels are either at ground level or just below the ground based upon the dry or wet seasons.

The Atlantic Ridge Preserve State Park is important to the hydrology of the area in that the wetlands filter stormwater before it reaches the St. Lucie River, Indian River Lagoon, the Loxahatchee River. The correction to the hydrology of the preserve will help to replenish the aquifers. There are many native plant species found in the different communities. Native animal species that live in the Preserve are provided the four essential elements they need to survive: food, water, shelter, and space.

## 2.0 RESTORATION GOALS AND OBJECTIVES

### 2.1 GOAL 1 - Restore the hydrology of the preserve

#### *Objective A: Restore Site Hydrology*

Fill the 21 miles of ditches and canals throughout the preserve. This will allow water flow to distribute outward through the preserve thereby reconnecting the different wet ecosystems located within. This will also allow for eradication of non-native, invasive plant species unable to thrive in a wet environment. The restored preserve will allow for native plants and animals to flourish at the site, including those threatened or endangered.

The map below shows the agricultural ditches and canals to be filled.

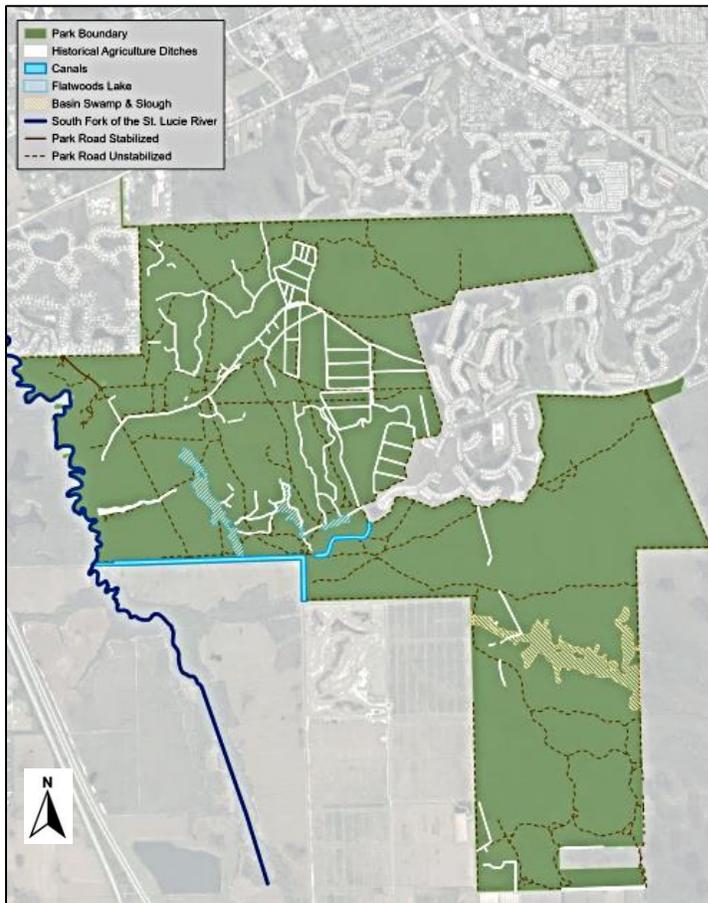


Fig. 13 Hydrological Alterations Map of Atlantic Ridge Preserve State Park  
Source: FDEP, Atlantic Ridge Preserve State Park Unit Management Plan, 2005

## 2.2 GOAL 2 - Increase Ecosystem Service Functions

### *Objective A: Increase nutrient cycling*

The ability of water and sediment to flow throughout the preserve will increase nutrient cycling. This in turn will bring about population increases in plant species and net primary production, which will in turn increase available food sources for animal species. Soil function and structure will undergo chemical changes contributing to a healthier, more resilient soil.

### *Objective B: Increase filtering capabilities*

Changing the hydrology of the preserve will provide integration of water flow throughout the preserve. This will allow for a healthier water system due to the filtering capabilities of the wetland plants.

## 3.0 REFERENCE ECOSYSTEM

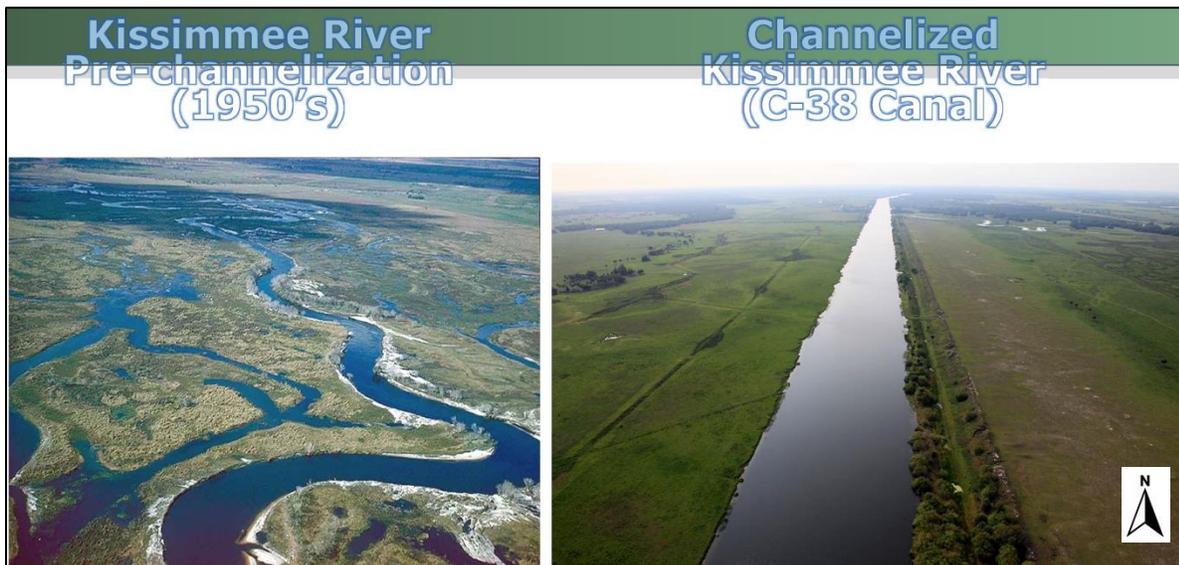


Fig. 14 The Kissimmee River Basin in the 1950's (left) and after installed the C-38 canal (right).  
Credit: SFWMD

The Kissimmee River Restoration Project is a billion-dollar project in Central Florida that included restoring the upper and lower basins of the Kissimmee River to bring back its original watershed system including its historical floodplain. This site was chosen as it contains many aspects that are included in the preserve restoration project – filling of ditches and canals to restore water flow and floodplains.

Due to flooding from two major hurricanes during the late 1940's, between 1962 and 1971, the U.S. Army Corp. of Engineers (USACE) at the direction of the U.S. Congress, took the Kissimmee River and turned it into a 56-mile, 30-foot-deep canal (the C-38 canal). Part of this project also included filling in the oxbows and the other areas that made up the floodplain. They also added six water control structures starting at the upper basin lakes down the river to Lake Okeechobee.

This waterflow change created negative environmental impacts to the river's ecosystems and habitats. Floating plants became overabundant, taking up needed dissolved oxygen in the water. The winter bird populations dropped 90% and the largemouth bass fishery was destroyed. Lack of water flow at the project lead to wetland communities being replaced by terrestrial communities, and that caused a change in the food web. The loss of flood pulses stopped the necessary nutrient cycling. In their baseline report, the USGS provided this information, and this in turn (years later) lead to the 1976 Kissimmee River Restoration Act.

After years of feasibility studies, in 1992, Congress authorized the Water Resources Development Act. The project was jointly run by both state (SFWMD) and the federal government (USACE). After years of damage to the river-floodplain ecosystem, this massive restoration project finally started in 1999 and was just completed this year.

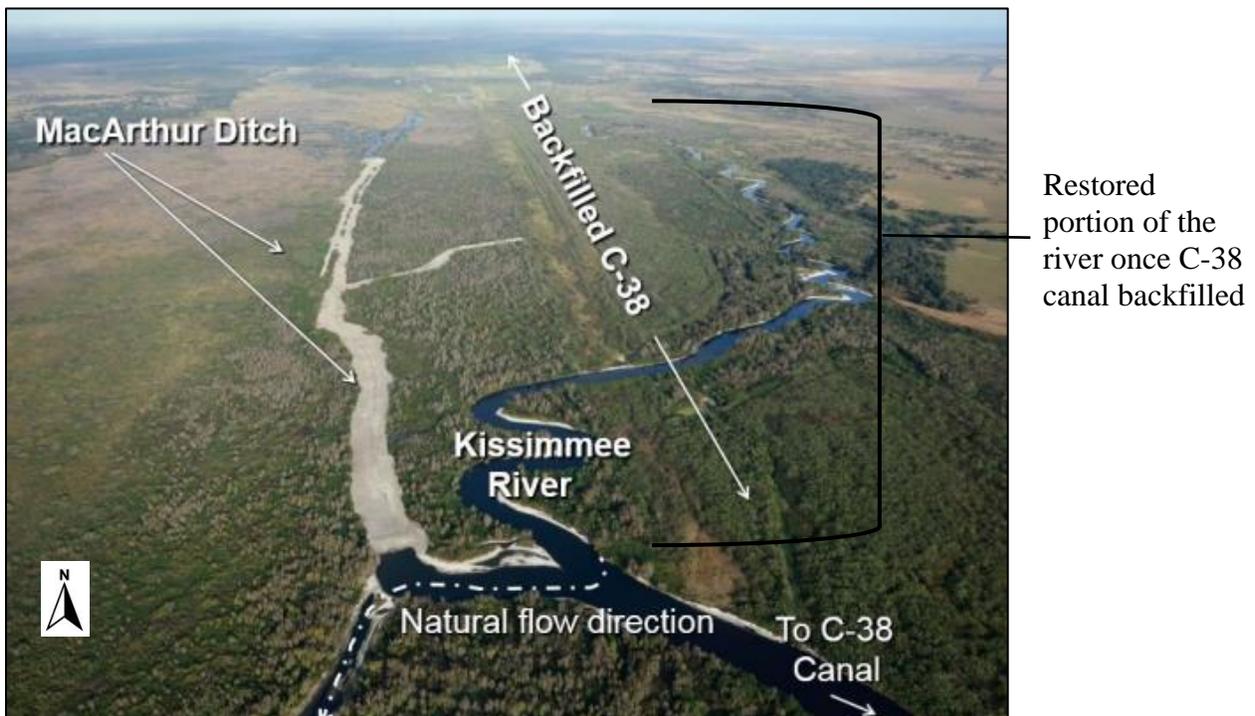


Fig. 15 Phase 1 Restoration – Backfilling MacArthur Ditch and C-38 Canal  
Credit: SFWMD

This portion of the restoration project contained over 22 miles of canal and ditches that were backfilled. Construction included backfilling and degrading the C-38 canal, widening areas of the river, restoring the original oxbows, elevating an existing railroad bridge, and removal of two water control structures.

Now the original waterflow of the river has returned, and the riparian and tributary areas have been restored to healthy conditions. The undesirable nonnative plants are gone, and native wetland plants are now thriving. Wading bird populations have doubled, and ducks and other water birds have returned. Over 44 miles of the river and 40 square miles of riparian and tributary areas have been restored.



Fig. 16 The Kissimmee River Basin after restoration.

Credit: SFWMD

Observations documented throughout the project show that water quality and dissolved oxygen levels have increased, invertebrates have recolonized, and wading birds and waterfowl have returned to the floodplain. Bass and sunfish populations have also risen. There has been decreases in the floating plant coverage and accumulated sediments on the river bottom have been reduced. Prescribed burns that have been forsaken in past years will now be done to keep down non-native vegetation. The flood basin has returned and as more water slowly flows through the river, the ecology of the basin will only get better. Monitoring will follow the changes to the Kissimmee River Basin for years to come.

#### **4.0 REGULATORY FRAMEWORK**

Permitting with numerous agencies will be required to implement this restoration plan. The U.S. Army Corp of Engineers provides permits for minor impacts to wetlands and streams. The plan calls for filling of ditches which is considered “in, on, or over wetlands” per the FDEP so a general permit is needed.

The FDEP now has the authority to process permits on the state’s wetlands and surface waters under Chapter 62-331 of the Florida Administration Code (FAC), known as the “State 404 Program.” The bill passed in 2018 allows Florida to assume the federal dredge and fill permit program under section 404 of the Clean Water Act. Both federal and state requirements are fulfilled by the state permits. Because the project is within state-assumed waters, this project will require both a State 404 permit and a state Environmental Resource Permit (“ERP”).

The SFWMD oversees the ERP permit on behalf of the state. The permit is required as this project calls for “other activities affecting state waters” since there will be backfilling and/or plugging on the site in wetland areas.

Martin County has a “Land Clearing Permit” for agricultural clearing and exotic vegetation. Since this project involves neither, a permit will not be needed with the county. There is no mitigation nor protection standards needed for this project, so a permit with the City of Stuart is not needed.

## **5.0 RESTORATION ALTERNATIVES**

### ***5.1 Alternative 1: Passive Restoration (No Action)***

Passive restoration at the preserve will potentially lead to a total loss of hydrology function due to overuse of water from overpopulation and expected droughts from climate change. Invasive, non-native species of plants that are drought tolerant will overtake the native plants changing the communities throughout the preserve. Soil will degrade and with no water resources, wildlife will find better suited areas with water resources.

### ***5.2 Alternative 2: Enlarging of St. Lucie Tributary and Filling of Ditches***

Enlarging the St. Lucie tributary in the northwestern portion of the preserve will allow more water to flow to the preserve naturally. The filling of the ditches is a necessity for the land to be suitable for water flow. Non-native plants will be eradicated from inundation, and nutrients need for the native plants and soils will be improved. This alternative will increase surface water flow to the entire preserve and improve productivity of wetland areas. Animal species found in the wet environments will increase in population.

### ***5.3 Alternative 3: Adding a Pumping Station***

A pumping station could be added between the St. Lucie River and the tributary that flows on the preserve. Water quantity would be increased, nutrients from sediment would flush through the system, and the wet environments of the preserve would be improved. Water flow would increase native plant communities and increase the animal species found in wet areas, i.e., frogs, fish, wading birds and more. The increase in water would allow for more water flow to the Kitching Creek and the Loxahatchee River, providing filtering services.

## **6.0 PREFERRED ALTERNATIVE**

Restoration Alternative 2 has been chosen as the most logical because it will increase the water flow and hydrology best and has the least amount of future maintenance needed on the site. The original plan only included backfilling the ditches, but the addition of an oxbow will allow a larger flow of water to reach into the site, which in turn will create a larger floodplain. This is an added component not shown in the original restoration plan. With the enlarged watershed of the preserve, more water will flow through the preserve down to the Kitching Creek into the Loxahatchee River.

**6.1 Restoration Alternative 2 - Timeline and Costs**

After the necessary permits have been obtained, the expected length of this restoration project is approximately 24 months of construction and 12 months of monitoring. The construction portion will be broken down into two parts:

1. Filling in the 21 miles of drainage ditches found throughout the preserve
2. Constructing an oxbow -- 3,839' long x 6' wide x 6' deep -- into the preserve from the South Fork of the St. Lucie River

Part 1 will be done based upon a schedule to be determined by SFWMD and USACE. The scope will include the delivery, spread, and tamping of fill to all draining ditches located in the preserve. The filling of all ditches must be completed prior to Part 2.

Part 2 will begin only after all draining ditches have been filled. This portion of the project will include adding an oxbow off the South Fork of the St. Lucie River. The oxbow will include digging and removing fill from the preserve as shown in Fig. 17.

After the construction is completed, monitoring for a year will be necessary to study both hydrology and plant community changes. This monitoring will be done by an SFWMD scientist so no new employee costs will be needed. (Once the monitoring is completed, then the next restoration plan can be written to add native vegetation to the appropriate communities for approval).

**6.2 Restoration Alternative 2 - Construction Costs**

Construction costs are listed below (See Appendix A): TOTAL      \$1,328,554

<b><i>WORK TO BE DONE</i></b>	<b><i>ITEM COST BREAKDOWN</i></b>	<b><i>SUBTOTAL</i></b>
PART 1 CONSTRUCTION	110,880' L x 10' W and 10' D	\$783,428
Fill including delivery, dump and spread	410,667 cubic yards of fill \$7.07 linear foot x 110,800'	
PART 2 CONSTRUCTION	Dig 3,839' x 6' x 6' oxbow	\$545,126
Creation of oxbow	Remove 5,120 cubic yds of fill \$106.49 per cubic yard	

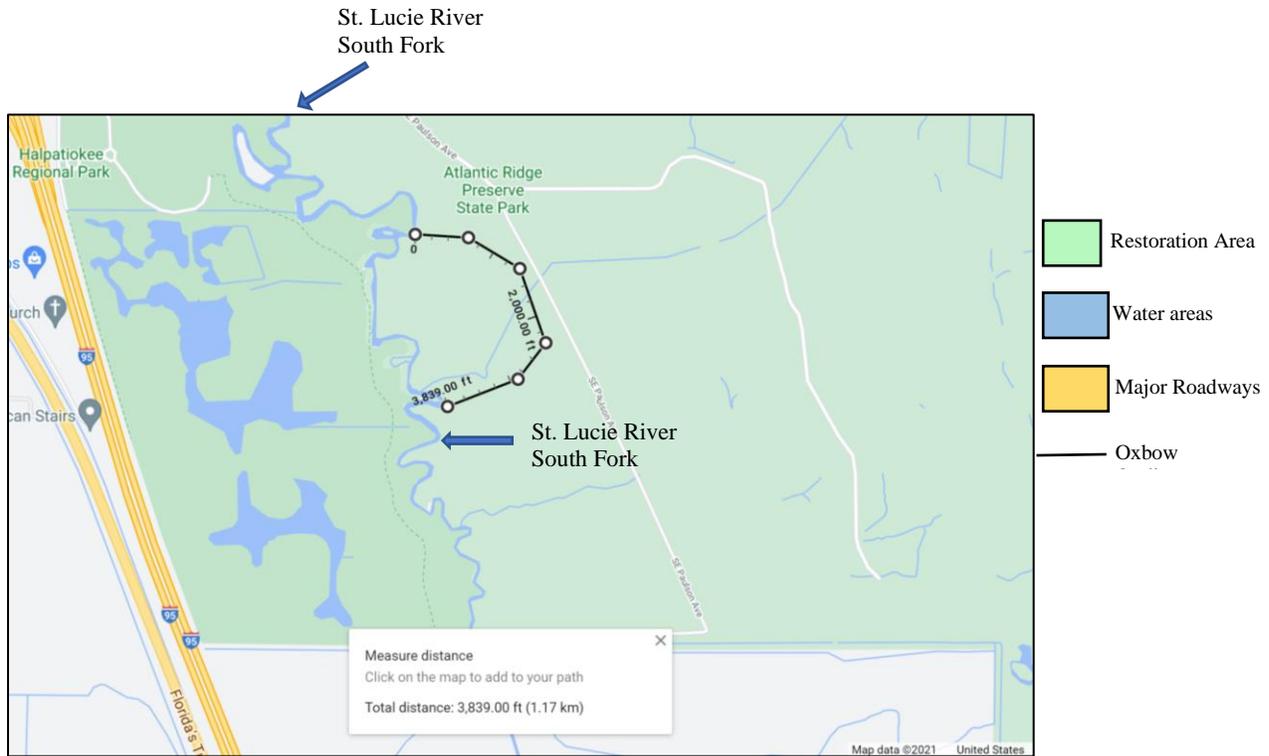


Fig. 17 Part 2 Oxbow Layout

Source: Google Maps

### 6.3 *Expected Outcomes*

Restoration of hydrology does not happen overnight. It is expected that within 5 years that this restoration will have increased water quality, water flow, nutrient cycling, and soil health. It is expected that increases in populations of wetland birds and amphibians will occur within the first 3-5 years. The water flow will help remove the non-native plants and allow for the native, wet-loving plants to flourish. Water will be filtered by the increased wetland plants population prior to entering the Loxahatchee River.

Once this hydrology restoration is completed, monitoring and evaluation will begin. Once it is determined that this hydrology of the site can support the wetlands and waterflow, then native plant installation and prescribed burns will be done under the next phase of restoration on this preserve.

### 7.0 MONITORING AND EVALUATION PLAN

The hydrology of this site will need to be monitored and evaluated before, during, and after the wet season to determine the site is ready for future plant community restoration. Since future restoration rely on the outcome of this restoration, it is recommended that 6-month, 12-month, 18-month and 24-month monitoring be completed to review structure changes, functional changes, and plant and animal diversity changes.

Also, monitoring of the Reference System is necessary to compare the two projects since they both involve filling of ditches and canals to return historical waterflows and floodplains. It is recommended that a monitoring report be done immediately after start of project to obtain current information on all ecological changes to the Kissimmee River from its restoration completed this year. This report should include data on soil, water quality, plants, animals and hydrology before restoration and a comparison of that information to current site conditions.

According to the 2005 Management Plan, future project plans will be written for returning these areas (where the ditches and canals were filled in) to their original plant communities by planting native obligative and facultative plants suited for each area. Also, a prescribed burn plan will be written for the removal of non-native plant species located throughout the site.

## **8.0 OUTREACH AND INFORMATION PLAN**

Community outreach is important for this project to succeed. There are a few housing developments, farms, and a private golf course located around this preserve. There are two housing developments, a middle school, few businesses north of the preserve, the Halpatickee Regional Park to the west, one housing development to the east with its own elementary school, and other housing areas south of Bridge Road.

A preconstruction meeting will be provided to the public, and flyers will be distributed to those homeowner management companies, and business owners located around the preserve. The main concern would be possible flooding in the areas to the south of the preserve, those being mainly farmland, golf course, and private landowners. All nonprofit businesses concerned with water and wildlife will be advised of meetings. This would include the Nature Conservancy of Florida, The Audubon Society of Martin County, Florida Chapter of the Sierra Club, and any others that are interested in attending. Of course, all other stakeholders will be involved (see section 1.17).

In conclusion, as we have seen the changes made to the Kissimmee River restoration project and the positive outcomes from that project, we are hopeful that our project will also restore the dried out wetland and floodplain in our preserve. In time, we are hopeful that more restoration projects can be done to restore more of the lost connection between the St. Lucie River and the Loxahatchee River.

## 9.0 REFERENCES

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## 10.0 APPENDICES

### 10.1 APPENDIX A

MyOregonState - Overview x Topic: Questions?? x Cost to Backfill Trench - 2021 Co... x Remodeling and Repair - Installa... x

homewyse.com/services/cost\_to\_backfill\_trench.html

Bank of America Denise OSU Environmental & W... WNU Cards, Loans & Mor... Medical Auto & Utilities Payroll & 401K

### Cost to Backfill a Trench

Updated: April 2021

Trench Backfilling Calculator

Zip Code: 34997 Linear Feet: 110800

[Item details](#)

Item	Qty	Low	High
<input checked="" type="checkbox"/> Trench Backfilling Labor, Basic Basic labor to backfill trench with favorable site conditions. Hand fill and compact soil to grade, with 2+% slope away from structure(s). Includes planning, equipment and material acquisition, area preparation and protection, setup and cleanup.	9961.3 h	\$185,742	\$783,428
<b>Totals - Cost To Backfill Trench</b>	110800 FT	\$185,742	\$783,428
<b>Average Cost per Linear Foot</b>		\$1.68	\$7.07

[https://www.homewyse.com/services/cost\\_to\\_backfill\\_trench.html](https://www.homewyse.com/services/cost_to_backfill_trench.html)

### Cost to Remove Dirt

Updated: April 2021

Dirt Removal Calculator

Zip Code: 34997 Cubic Yards: 5119

[Item details](#)

Item	Qty	Low	High
<input checked="" type="checkbox"/> Dirt Removal Labor, Basic Basic labor to remove dirt with favorable site conditions. Load dirt into transfer vehicle / container and transport to dump destination. Includes planning, equipment and material acquisition, area preparation and protection, setup and cleanup.	6928.5 h	\$449,545	\$544,902
<input checked="" type="checkbox"/> Dirt Removal Equipment Allowance Job related costs of specialty equipment used for job quality and efficiency, including: Skid loader with excavation   demolition   loading attachment. Daily rental. Consumables extra.	1 job	\$158	\$224
<input type="checkbox"/> Dirt Removal Debris Disposal Costs to load and haul away old materials, installation waste and associated debris.	5119 CY	\$159,958	\$181,963
<b>Totals - Cost To Remove Dirt</b>	5119 CY	\$449,703	\$545,126
<b>Average Cost per Cubic Yard</b>		\$87.85	\$106.49

[https://www.homewyse.com/services/cost\\_to\\_remove\\_dirt.html](https://www.homewyse.com/services/cost_to_remove_dirt.html)